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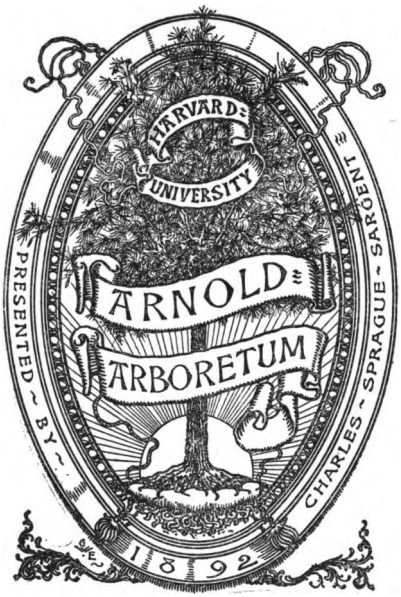

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MUHLENBERGIA

Volume 1

A Journal of Botany

Edited and Published by A. A. Heller

LOS GATOS, CALIFORNIA
1900-1906

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DATES OF ISSUE

The following are the dates upon which the several numbers of this volume were mailed:

Number 1, pages 1-8	November 10, 1900
Number 2, pages 9-30	August 9, 1901
Number 3, pages 31-46	January 9, 1904
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Number 5, pages 63-110	September 26, 1904
Number 6, pages 111-118	March 13, 1905
Number 7, pages 119-126	November 6, 1905
Number 8, pages 127-138	April 24, 1906
Number 9, pages 139-147	July 30, 1906

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Volume 1 No. 1

MUHLENBERGIA

LANCASTER, PA., NOVEMBER 10, 1900.

[All unsigned articles in this journal are by the Editor, and the types of all new species described by him are deposited in his private herbarium, unless otherwise stated.]

SOME CHANGES IN NOMENCLATURE

This article is a continuation of the first pages of the Catalogue of North American plants, issued under this date. The bare citation without discussion in most cases is undesirable, but lack of time forbids a more extended treatment of the different species under consideration.

Sphaerostigma Nelsonii
Sphaerostigma minor Aven Nelson, Bull. Torr. Club, **26**: 130. 1899; not *S. campestre minor* Small, 1896.

Taraxia taraxacifolia (Wats.)
Oenothera heterantha var. *taraxacifolia* Wats. Proc. Am. Acad. **8**: 589. 1873.

Phyllodoce Breweri (A. Gray)
Bryanthus Breweri A. Gray, Proc. Am. Acad. **7**: 367. 1867.

Phyllodoce Aleutica (Spreng.)
Menziesia Aleutica Syreng. Syst. **2**: 202. 1825.
Bryanthus Aleuticus A. Gray, Proc. Am. Acad. **7**: 368. 1867.

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Tetragonanthus Brentonianus (Griseb.)
Halenia Brentoniana Griseb. in Hook. Fl. Bor. Am. **2**: 68. 1834.

Tetragonanthus heterantha (Griseb.)
Halenia heterantha Griseb. in. Hook. Fl. Bor. Am. **2**: 68, *pl. 156 B.* 1834.
Halenia deflexa var. *heterantha* Fernald, Rhodora, **1**: 37. 1899.

Amsonia Texana (A. Gray)
Amsonia angustifolia var. *Texana* A. Gray, Syn. Fl. **2**: Part 1, 81. 1878.

Macrosiphonia macrosiphon (Torr.)
Echites macrosiphon Torr. Bot. Mex. Bound. 158. 1859.
Macrosiphonia Berlandieri A. Gray, Syn. Fl. **2**: Part 1, 83. 1878.

Vincetoxicum cynanchoides (Engelm. & Gray)
Gonolobus cynanchoides Engelm. & Gray, Bost. Journ. Nat. Hist. **5**: 251. 1845.

Vincetoxicum flavidulum (Chapm.)
Gonolobus flavidulus Chapm. Fl. S. U. S. 368. 1860.

Vincetoxicum hastulatum (A. Gray)
Lachnostoma hastulata A. Gray, Proc. Am. Acad. **11**: 87. 1876.
Gonolobus hastulatus A. Gray, Proc. Am. Acad. **12**: 78. 1876.

Vincetoxicum parviflorum (Torr.)
Lachnostoma? parviflorum Torr. Bot. Mex. Bound. 165. 1859.
Gonolobus parviflorus A. Gray, Proc. Am. Acad. **12**: 77. 1876.

Vincetoxicum parvifolium (Torr.)
Gonolobus parvifolius Torr. Bot. Mex. Bound. 166. 1859.

Vincetoxicum pubiflorum (Dec.)
Chthamalia pubiflora Dec. in DC. Prod. **8**: 605. 1844.
Gonolobus pubiflorus Engelm.; A. Gray, Proc. Am. Acad. **12**: 77. 1876.

In the journal cited above, Dr. Gray credits Engelman with the publication of *Gonolobus pubiflorus* in Bost. Journ. Nat. Hist.

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5: 252. 1845 (Plantae Lindheimerianae 44, re-paged). In that publication, under the description of *Gonolobus cynanchoides*, Engelman says: "From the description, there can be little doubt that this plant is a congener of Chthamalia biflora, and C. pubiflora, *Decaisne, in DC. prodr.*, from which it differs in the glabrous corolla, etc.; but surely it cannot be separated from Gonolobus, as that genus is left by Decaisne." The writer can find nothing in the above sentence to indicate that Engelman published *Gonolobus pubiflorus* in it. Torrey is also credited with the use of the same combination in Bot. Mex. Bound. 165. What he actually says under *Gonolobus biflorus*, is that "C. (hthamalia) pubiflora, *Decaisne, l. c.* is Gonolobus prostratus of Elliott, but not of R. Brown." Apparently the species was first properly named under *Gonolobus* in 1876, as given in the above citation.

Vincetoxicum sagittifolium (A. Gray)
Gonolobus sagittifolius A. Gray, Proc. Am. Acad. **12**: 77. 1876.

Vincetoxicum Wrightii (A. Gray)
Gonolobus biflorus var. *Wrightii* A. Gray, Proc. Am. Acad. **12**: 78. 1876.

In this connection it may be well to again refer to the fact pointed out by the writer several years ago (Cont. Herb. F. & M. Coll. **1**: 79. 1895), that Rafinesque, and not Nuttall, is the author of the name *Gonolobus biflorus*. He published it in New Flora, **4**: 58. 1836. The name with Nuttall as its author was published by Decaisne in DC. Prod. **8**: 605. 1844, as a synonym of *Chthamalia biflora*. It is evident from comparison of the two descriptions, and from the type stations, that only one species was under consideration by the two authors, and that in all probability Rafinesque's description was taken from one of Nuttall's specimens.

Gymnosteris parvula (Rydb.)
Gilia parvula Rydb. Mem. N. Y. Bot. Gard. **1**: 320. 1900.

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Agastache occidentalis (Piper)
Vleckia occidentalis Piper, Erythea, **6:** 31. 1898.

Agastache scrophulariaefolius mollis (Fernald)
Lophanthus scrophulariaefolius var. *mollis* Fernald, Rhodora, **1:** 220. 1899.

Brittonastrum lanceolatum (A. Gray)
Cedronella cana var. *lanceolata* A. Gray, Syn. Fl. **2:** Part 1, Ed. 2, 462. 1886.

Brittonastrum rupestre (Greene)
Cedronella rupestre Greene, Pittonia, **1:** 164. 1888.

Hedeoma oblongifolia (A. Gray)
Hedeoma piperita var. *oblongifolia* A. Gray, Proc. Am. Acad. **8:** 366.
Hedeoma thymoides var. *oblongifolia* A. Gray, Syn. Fl. **2:** Part 1, 362. 1878.

Ramona pachystachya (A. Gray)
Audibertia incana var. *pachystachya* A. Gray, Syn. Fl. **2:** Ed. 2, Part 1, 461. 1886.
Audibertia pachystachya S. B. Parish, Erythea, **6:** 91. 1898.

Elephantella attolens (A. Gray)
Pedicularis attolens A. Gray, Proc. Am. Acad. **7:** 384. 1867.

Pentstemon Eastwoodiae
Pentstemon Utahensis Eastwood, Zoe, **4:** 124. 1893; not *P. glaber* var. *Utahensis* Wats. 1891.

Synthyris Bullii (Eaton)
Gymnandra Bullii Eaton; Eaton & Wright, N. A. Bot. 259. 1840.
Synthyris Houghtoniana Benth. in DC. Prodr. **10:** 454. 1846.
Wulfenia Houghtoniana Greene, Erythea, **2:** 83. 1894.
Wulfenia Bullii Barnhart, Bull. Torr. Club, **26:** 378. 1899.

Synthyris cordata (A. Gray)
Synthyris reniformis var. *cordata* A. Gray, Bot. Cal. **1:** 571. 1876.
Synthyris rotundifolia var. *cordata* Syn. Fl. **2:** Part 1, 285. 1878.
Wulfenia cordata Greene, Man. Bot. Bay Reg. 280. 1894.

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Synthyris gymnocarpa (Aven Nelson)
Wulfenia gymnocarpa Aven Nelson, Bull. Torr. Club, **25**: 282. 1898.

Synthyris major (Hook.)
Wulfenia reniformis var. *major* Hook. Journ. Bot. & Kew Gard. Misc. **5**: 257. 1853.
Wulfenia major Heller, Cat. N. A. Pl. 7. 1898.

Synthyris Wyomingensis (Aven Nelson)
Wulfenia Wyomingensis Aven Nelson, Bull. Torr. Club, **25**: 281. 1898.

Tonella tenella (Benth.)
Collinsia tenella Benth. in DC. Prodr. **10**: 593. 1846.
Tonella collinsioides Nutt. as synonym in Benth. l. c.

Diapedium attenuatum (A. Gray)
Diclcptera brachiata var. *attenuata* A. Gray, Syn. Fl. **2**: Part 1, 331. 1878.

Antennaria plantaginifolia petiolata (Fernald)
Antennaria plantaginea var. *petiolata* Fernald, Proc. Bost. Soc. Nat. Hist. **28**: 242. 1898.

Arnica Grayi
Arnica cordifolia var. *eradiata* A. Gray, Syn. Fl. **1**: Part 2, 381. 1878; not *A. angustifolia* var. *eradiata* A. Gray, 1863.

Brauneria angustifolia (DC.)
Echinacea angustifolia DC. Prod. **5**: 554. 1836.
Brauneria Tennesseensis Beadle, Bot. Gaz. **25**: 359. 1898.

Carduus bipinnatus (Eastwood)
Cnicus Drummondii var. *bipinnatus* Eastwood, Zoe, **4**: 8. 1893.
Cnicus bipinnatus Eastwood, Proc. Cal. Acad. III. **1**: 121. 1898.

Carduus calcareus (Jones)
Cnicus calcareus Jones, Proc. Cal. Acad. II. **5**: 704. 1895.

Carduus ciliolatus (Henderson)
Circium undulatum ciliolatum Henderson, Bull. Torr. Club, **27**: 348. 1900.

Carduus clavatus (Jones)
Cnicus clavatus Jones, Proc. Cal. Acad. II. **5**: 704. 1895.

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Carduus diffusus (Eastwood)
Cnicus Rothrockii var. *diffusus* Eastwood, Proc. Cal. Acad. II. **6:** 303.
Cnicus diffusus Eastwood, Proc. Cal. Acad. III. **1:** 121, 1898.

Carduus hesperius (Eastwood)
Cnicus Hesperius Eastwood, Proc. Cal. Acad. III. **1:** 122. 1898.

Carduus nidulus (Jones)
Cnicus nidulus Jones, Proc. Cal. Acad. II. **5:** 705. 1895.

Chrysothamnus appendiculatus (Eastwood)
Bigelovia graveolens appendiculata Eastwood, Proc. Cal. Acad. III. **1:** 74. 1897.

Erigeron Cascadensis
Erigeron spatulifolius Howell, Fl. N. W. Am. **1:** 317. 1900; not *E. spathulifolius* Rydb. Bull. Torr. Club, **26:** 545. 1899.

The type of this species was collected by Thomas Howell "on rocky banks, Pansy Camp, Cascade mountains, Oregon."

Gaertneria bipinnatifida dubia (Eastwood)
Franseria bipinnatifida dubia Eastwood, Proc. Cal. Acad. III. **1:** 117. 1898.

Gaertneria Chamissonis viscida (Eastwood)
Franseria Chamissonis viscida Eastwood, Proc. Cal. Acad. III. **1:** 117. 1898.

Isocoma hirtella (A. Gray)
Linosyris hirtella A. Gray, Pl. Wright. **1:** 95. 1852.
Bigelovia Wrightii var. *hirtella* A. Gray, Syn. Fl. **1:** Part 2, 142. 1878.

Lacinaria Helleri Porter
Liatris Helleri Porter, Bull. Torr. Club, **18:** 147. 1891.

Lacinaria pilosa (Ait.)
Serratula pilosa Ait. Hort. Kew. **3:** 138. 1789.
Liatris graminifolia var. *dubia* A. Gray, Man. Ed. 2, 185. 1856.
Lacinaria graminifolia pilosa Britton, Mem. Torr. Club, **5:** 314. 1894.

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Pyrrocoma insecticruris (Henderson)
Aplopappus insecticruris Henderson, Bull. Torr. Club, **27**: 346. 1900.

Ptiloria lygodesmoides (Jones)
Stephanomeria lygodesmoides Jones; Henderson, Bull. Torr. Club, **27**: 349. 1900.

Senecio Pagosanus
Senecio lactucinus Greene, Pittonia, **4**: 121. 1900; not *S. lactucinus* Greene, Erythea, **1**: 223. 1893.

The type was collected "on stony alpine slopes at 12,000 feet in the mountains of Colorado near Pagosa Peak, C. F. Baker, 9 Aug. 1899."

Solidago Vaseyi
Solidago arguta var. *Caroliniana* A. Gray, Syn. Fl. **1**: Part 2, 155. 1878; not *S. Caroliniana* (L.) B. S. P.

A species inhabiting the mountains of the Carolinas and adjacent Georgia. Named after the collector, G. R. Vasey.

Sphaeromeria cana (D. C. Eaton)
Tanacetum canum D. C. Eaton, U. S. Geog. Surv. 40th Par. **5**: 179, *pl. 19. f. 8-14.* 1871.

Sphaeromeria capitata (D. C. Eaton)
Tanacetum capitatum D. C. Eaton, U. S. Geog. Surv. 40th Par. **5**: 180. *pl. 19. f. 1-7.* 1871.

Sphaeromeria potentilloides (A. Gray)
Artemisia potentilloides A. Gray, Proc. Am. Acad. **6**: 551. 1865.
Tanacetum potentilloides A. Gray, Proc. Am. Acad. **9**: 204. 1874.

Sphaeromeria simplex (Aven Nelson)
Tanacetum simplex Aven Nelson, Bull. Torr. Club, **26**: 484. 1899.

Stenotus laceratus (Henderson)
Aplopappus laceratus Henderson, Bull. Torr. Club, **27**: 347. 1900.

Stenotus MacLeanii (T. S. Brandegee)
Aplopappus (*Stenotus*) *MacLeanii* T. S. Brandegee, Bot. Gaz. **27**: 448. 1899.

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Verbesina aristata (Ell.)
Helianthus aristatus? Ell. Sk. **2**: 428. 1824.
Actinomeris nudicaulis Nutt. Trans. Am. Phil. Soc. II. **7**: 364. 1841.
Verbesina nudicaulis A. Gray, Proc. Am. Acad. **19**: 12. 1883.

Xylorrhiza venusta (Jones)
Aster venustus Jones, Zoe, **2**: 247. 1891.

Nabalus barbatus (T. & G.)
Nabalus Fraseri var. *barbatus* T. & G. Fl. N. Am. **2**: 481. 1843.
Prenanthes serpentaria var. *barbata* A. Gray, Syn. Fl. **1**: Part 2, 434. 1878.

Nabalus hastatus (Less.)
Sonchus hastatus Less. Linnaea, **6**: 99. 1831.
Nabalus alatus Hook. Fl. Bor. Am. **1**: 294. 1834.

Nabalus Mainensis (A. Gray)
Prenanthes Mainensis A. Gray, Syn. Fl. **1**: Part 2, 433. 1878.

Nothocalais nigrescens (Henderson)
Microseris nigrescens Henderson, Bull. Torr. Club, **27**: 348. 1900.

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Volume 1 No. 2

MUHLENBERGIA

LANCASTER, PA., ~~June~~ August 9, 1901.

[All unsigned articles in this journal are by the Editor, and the types of all new species described by him are deposited in his private herbarium, unless otherwise stated.]

EDITORIAL.

In a manner this journal is a continuation of the publication issued six years ago entitled "Contributions from the Herbarium of Franklin and Marshall College," the abbreviation for which is Cont. Herb. F. & M. Coll. The first and only paper published under that cumbersome title was "Botanical Exploration in Southern Texas during the Season of 1894," consisting of 116 pages and 9 plates. A few years' experience in the use of citations has taught the writer that long titles for serial publications are not desirable, and should always be avoided.

The journal in its present form has been in mind for the past two or three years, and the name MUHLENBERGIA was decided upon a year before the first number was issued. Though material for publication had been on hand for some time prior to the appearance of the first number, it could not be included, for that number, as therein stated, was issued hurriedly and prematurely in order to serve a special purpose.

Primarily intended as a medium for his own writings, the editor also desires to offer space in the journal for the publication of articles of interest concerning the local flora, both of Lancaster county and the State of Pennsylvania, and hopes his friends will abundantly avail themselves of the opportunity.

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SOME FUNGI FROM PORTO RICO.

By F. S. Earle.

The following fungi were collected by Mr. A. A. Heller in Porto Rico during January and February, 1900:

MICROTHYRIACEAE

Microthyrium Laguncullariae Wint.?

The specimens are immature, no spores being developed, hence the determination is tentative only.

On living leaves of *Laguncularia racemosa*, Mayaguez, altitude 10 feet. January. No. 4361.

PERISPORIACEAE

Apiosporium sp.

As no perithecia were developed, the species could not be determined.

On *Eugenia Jambosa*. January. No. 4428.

Meliola glabra Berk. & Curt.

On upper surface of leaves of *Piper aduncum*, two miles southeast of Mayaguez, altitude 400 feet. January. No. 4359a (with *Cercospora Portoricensis*).

On *Sauvagesia erecta*, fourteen miles southeast of Mayaguez, altitude 1000 feet. January. No. 4480.

Meliola Ipomoeae sp. nov.

Epiphyllous, covering small, 1mm., irregularly rounded, seldom confluent, brown spots: mycelium rather scanty, threads much branched, slender, about 7μ, septate at intervals of 15-25μ: capitate hyphopodia abundant, small, 16-20μ long, regular, head cell globular, 10-12μ, basal cell very short 4-8x6-7μ, attached at an acute angle: setae abundant, straight or abruptly bent at base, slender, fuscous, frequently septate, tips obtuse, entire, subhyaline, 250-300μ long, about 7μ thick at base and 4μ thick at tip; perithecia few (2-4) on each spot, small, 120-160μ, black,

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collapsing, obscurely ostiolate, composed of somewhat regularly hexagonal cells about 12μ in diameter: asci broadly oval, usually 4-spored, soon evanescent: ascospores compressed, oval as seen in broader aspect, cylindrical and sometimes slightly curved as seen from the side, ends obtusely rounded, about equally 4 septate, scarcely if at all constricted, the fourth cell often slightly enlarged, fusco-olivaceous, sub-transparent, about 35x14x8μ.

On living leaves of *Ipomoea* sp., near Mayaguez, altitude 400 feet. January. No. 4358.

Meliola Laguncullariae sp. nov.

Amphigenous, forming black, orbicular spots 3-5mm. in diameter, or more often widely effused: mycelial threads slender, 4-6μ, obscurely and rather distantly septate, scattered, not crowded, forming a thin closely adhering pellicle: capitate hyphopodia distant, alternate, divaricate, small, slender, about 12-16μ long, head cell oblong or narrowly obovate, usually rounded, occasionally somewhat irregular, 8-12x6-7μ: mucronate hyphopodia occasional, alternate or opposite, slender, about 16x4μ, tapering regularly upward but the top blunt or truncate: setae none: perithecia scattered, globose, not collapsing, about 150μ, ostiolum not observed, surface conspicuously roughened by chitinized conical projections (as in *M. glabra* B. & C.), about 12μ at base by 8-12μ high: asci soon evanescent, not observed: ascospores small, oval, light fuscous, about equally 4 septate, ends rounded, about 32x12μ.

This is evidently closely related to *Meliola glabra* B. & C., with which it agrees almost exactly in the roughened exterior of the perithecium, but it is easily distinguished by the more widely effused, very slender mycelium, and by the small, slender hyphopodia. The spores too are smaller.

On living leaves of *Laguncularia racemosa*, Mayaguez, altitude 10 feet. January. No. 4361a.

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Meliola Panici sp. nov.

Forming black, small, 1-3mm. frequently confluent spots: mycelium threads 6-8μ thick, sparingly branched, septate at intervals of 10-16μ: capitate hyphopodia usually alternate and strongly divaricate, about 16-20μ long, basal cell 6-8μ long, head cell broader than long, irregular, usually three or four lobed: mucronate hyphopodia abundant, opposite in pairs at right angles to the thread, bottle-shaped, light fuligenous, about 12μ long: setae numerous, straight, tips undivided, obtuse, obscurely septate, opaque, 400-600μ long, base 8-10μ thick: perithecia scattered, black, slightly or not at all collapsing, 150-200μ, non ostiolate: asci oval, 3-4 spored, soon evanescent: ascospores compressed, 4 septate, slightly constricted, ends rounded, about 40x12x8μ.

This can be distinguished from forms of what have been called *M. amphitricha* Fr. by its irregularly lobed hyphopodia, and from *M. tenuis* B. & C. which it closely resembles in general appearance and in the lobed hyphopodia, by the uniformly undivided setae and somewhat smaller spores.

On *Panicum latifolium*, calcareous hills east of Santurce, altitude 25 feet. January. No. 4343.

Meliola Piperis sp. nov.

Forming dense, black, velvety, easily separable patches 5-10mm. in diameter: mycelial threads densely felted, straight or flexed, 6-8μ in diameter, septate at intervals of 12-20μ: capitate hyphopodia alternate or opposite, small, short, divaricate, about 12μ long, basal cell short, usually about 4μ, head cell globular, about 8μ: mucronate hyphopodia not seen: setae abundant, cylindric, not tapering, opaque throughout, occasionally obscurely septate, 150-200x6-8μ, 1-3 times dichotomously branched, primary branches divaricate, about 20-5μ long, ultimate branches short, acute, usually strict: perithecia abundant, not ostiolate, little or not collapsing, about 150μ, of firm brittle texture, wall cells small, 4-6μ: asci oval, soon evanescent, 2 (or 4?) spored:

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ascospores cylindric, nearly equally 4 septate, slightly constricted, ends rounded, about 35x10μ.

Two species of *Meliola* with branching setae have been described as occurring on leaves of *Piper* from Ecuador, *M. Patouillardi* Gailard, and *M. Pululahensis* Gailard. The former has also been reported on the stems (Bull. Soc. Myc. **8**: 186). Our specimens seem to differ sufficiently from this species in the smaller capitate hyphopodia, setae and spores, and in the absence of an ostiolum. It is also clearly related to *M. fuscata* Lev., and some specimens on *Piper* have been referred to that species.

On stems of *Piper aduncum*, near Mayaguez, altitude 400 feet. January. No. 4359b (with *M. glabra* B. & C. occurring on the leaves).

MELIOLA PSIDII Fr.

On living leaves of *Psidium Guajava* near Mayaguez, altitude 400 feet. January. No. 4360.

PARODIELLA PERISPORIOIDES (B. & C.) Speg.

On living leaves of *Crotalaria retusa*, five miles southeast of Mayaguez, altitude 800 feet. January. No. 4461.

HYPOCREALES.

Melanospora (?) Helleri sp. nov.

Perithecia superficial, densely aggregated, 3 or 4 to 20 or more on an indistinct basal stoma that penetrates the substratum, large, one-half to two-thirds mm., deeply collapsed, grayish externally from irregular flat, finally deciduous wart-like projections seemingly formed by the cracking of a hard outer layer; substance of the perithecial wall of dark brown, soft, small-celled parenchyma: ostiolum slightly papillate when young, but obscurely perforate only when collapsed, the opening filled with slender hyaline hairs: asci oblong, about 100x30μ, soon evanescent, paraphyses not seen: ascospores 8 (sometimes only 4), dis-

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tichous, oval, one-celled, at first hyaline, finally opaque and black, surrounded by a more or less distinct hyaline coating about 25-28x18-20μ, expelled and blackening the matrix when mature.

If this interesting fungus is to be placed in *Melanospora*, it must be in the subgenus *Vittadinula* as recognized by Lindau in Engler & Prantl Pflanzenfam. **1**: Part 1. 353. Its position here is at best somewhat anomalous, and a revision of this interesting but poorly understood group would probably show that it should be considered as constituting a new genus. Its final retention in the Hypocreales is perhaps a matter of doubt. It closely approaches the Sordariaceae, and serves as another instance of the relationship between this family of the Sphaeriales and the Melanosporeae.

Abundant on bark of fallen log in wet woods east of Santurce, altitude 10 feet. January. No. 4341.

SPHAERIALES.

Endothia longirostris sp. nov.

Stomata thickly scattered over large areas, sometimes confluent, bright yellow, deeply seated in the matrix, becoming erumpent, usually somewhat elongate, about 2-3x5-6mm.: perithecia 5 or 6 to 15 or more in each stroma, deeply buried, black, about ½mm. in diameter, ostioles long exserted, reaching nearly 1cm., brownish-yellow, roughened by the adhering stromatic material: conidia very minute, about 2x1μ, producing coral red tendrils from some of the ostioles: asci spindle-shaped, delicate, thin walled, a paraphysate, about 25-30x6μ: ascospores 8, hyaline, oval, at length about equally uniseptate, about 6x3μ.

This is a very conspicuous species from the bright yellow stromata and long brownish-yellow ostioles. It is said to be orange yellow when fresh.

On bark of fallen log in wet woods, calcareous hills east of Santurce, altitude 10 feet. January. No. 4340.

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Guignardia prominens sp. nov.

Scattered over large areas, frequently involving the entire leaf, which is at length slightly discolored: perithecia deeply buried, prominently elevating both leaf surfaces, about 150-200μ, the wall obscurely parenchymatous and closely united with the leaf tissue; ostiole obscurely perforate, often scarcely evident: asci slightly fascicled, fertile portion broadly oval, 50-60x25μ, with a narrow sterile base equalling the fertile portion, the wall conspicuously thickened, a paraphysate: ascospores 8, inordinate, oval, thick walled, hyaline, undivided, about 25x10μ.

On living leaves of *Aegiphila Martinicensis*, calcareous hills east of Santurce, altitude 10 feet. February. No. 4674.

HYSTERIALES.

Lembosia Agaves sp. nov.

Spots thickly scattered, blackened, slightly elevated, 1-3mm. in diameter: mycelium of slender, brown, anastamosing threads extending beyond the elevated spots: ascomata scattered or somewhat crowded, but not confluent, irregularly oval, ends obtuse, straight, not flexed, rather firm and carbonaceous, 200-500x80-100μ, lips closely appressed, bordered by a scanty subiculum of rigid, fuscous, anastamosing hairs 3-4μ in diameter: asci broadly oval, thin walled, 30-40x20-25μ: ascospores inordinate, ovate, uniseptate, constricted, the larger cell globular, the smaller narrowed to a point, at length light brown, 14-16x6-7μ.

On leaves of *Agave* sp., slopes west of Cabo Rojo, altitude 150 feet. January. No. 4429.

MONILIALES.

Cercospora Portoricensis sp. nov.

Hypophyllous, widely effused over irregular areas, forming a dark grayish-black coating, the leaf at length diocolored above but without definite bordered spots: sporophores scattered or loosely fascicled, light olivaceous, several times septate, often

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irregularly constricted and with adjacent cells of unequal diameter, conidial scars not evident, about 30-60x3-6μ: conidia subcylindric or somewhat clavate, light olivaceous, mostly straight, at first continuous, finally several septate, about 60-80x4μ.

This differs from the deecription of *Cercospora Piperis* Pat. Bull. Soc. Myc. **11**: 233, in the absence of definite spots, in the septate and irregularly inflated sporophores, and in the more evidently septate conidia.

On living leaves of *Piper aduncum*, near Mayaguez, altitude 400 feet. January. No. 4359 (with *Meliola glabra* on the upper surface of some of the leaves).

CERCOSPORIDIUM gen. nov. (Dematiaceae.)

Biophilus: sporophores elongate, soft, pannose, fasciculate: conidia acrogenous and pleurogenous, oblong, oval or ovate, once or several septate.

This is related to *Cercospora*, but differs in the long thread like sporophores and in the broader and shorter conidia. As the type of this genus I take the species published as *Scolecotrichum* (?) *Euphorbiae* Tracy & Earle, Bull. Torr. Bot. Club, **23**: 209, also as *Piricularia Euphorbiae* (T. & E.) Atkinson, Bull. Cornell univ. **3**: 40.

Cercosporidium Helleri sp. nov.

Hypophyllous, effused, forming a black velvety coating over considerable areas, at length discoloring the leaves, but without definite spots: sporophores greatly elongated, forming a tangled felted coating, dark olivaceous, occasionally septate, the free distal ends frequently twisted and flexed, scarred by the fallen conidia, 200-400 or more by 4-5μ: conidia obovate, obtuse, usually at length 3 septate, granular, 20-30x8-10μ.

On living leaves of *Sphenoclea Zeylanica* in moist ground near Anasco, altitude 25 feet. February. No. 4537.

UREDINALES.

Aecidium Wedeliae sp. nov.

Hypophyllous on yellow spots 2-5mm. in diameter: pseudo-

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peridia densely clustered, light yellow, short, scarcely emergent, margin erect, even, or at length slightly lacerate, about ⅓mm. in diameter, of loose cellular structure, the cells thin walled, minutely aculeate, about 30x20μ: spores very small, subpolygonal, light yellow, epispore smooth, about 16x12μ.

On living leaves of *Wedelia carnosa*, along the railroad at Mayaguez, altitude 10 feet. February. No. 4580.

COLEOSPORIUM ELEPHANTOPODIS (Schw.) Thuem.

On *Elephantopus* sp., damp woods south of Mayaguez, altitude 100 feet. February. No. 4569.

PUCCINIA CYPERI Arth.?

Uredo form only on *Cyperus* sp., moist ground near Anasco, altitude 23 feet. February. No. 4538.

PUCCINIA ELEOCHARIDIS Arth.?

Uredo form only, on *Eleacharis geniculata*, moist ground near Anasco, altitude 25 feet. February. No. 4539.

AGARICALES.

SCHIZOPHYLLUM COMMUNE Fr.

On fallen log, calcareous hills east of Santurce, altitude 15 feet. January. No. 4342.

Auburn, Alabama, October 3, 1900.

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OTHER PORTO RICAN FUNGI.

Besides my own collection, discussed in the preceding paper by Professor Earle, only two collections of fungi have been reported from the island. The first was made by Carl Schwanecke, who resided from 1847-1850 at Humacao on the east coast. His fungi were determined by Klotzsch, who enumerated them in Linnaea, **25**: 364-366. 1852.

The second and larger collection was made by P. Sintensis, who spent the years 1884-1887 making collections in all parts of the island. The fungi were determined by J. Bresadola, P. Hennings, and P. Magnus. They are listed in Engler Bot. Jahrb. **17**: 489-501. 1893.

The new species in these two collections are here printed in boldface type. The original arrangement of species is followed in both cases.

I. The Schwanecke Collection.

CONIOMYCETES.

1. Ustilago segetum Dittm.

HYPHOMYCETES.

2. Ozonium stuposum Pers.
   In arbor. prope Naguabo.

GASTEROMYCETES.

3. Arcyria punicea Pers.
   In arbor. prope Vaxardo [Fajardo] in mont. Luquillo.

PYRENOMYCETES.

4. Sphaeria concentrica Bolt.
   In arbor. prope Humacao.
5. Hypoxylon vulgare Link.
6. **Xylaria Portoricensis** Klotzsch.
   Ad ramos vetustos, prope Naguabo.

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7. **Xylaria clavicularis** Klotzsch.
Ad ligna putrida prope Naguabo.

DISCOMYCETES.

8. NIDULARIA STRIATA Bull.

HYMENOMYCETES.

9. EXIDIA AURIFORMIS Fr.
In arbor. prope Humacao.

10. **Thelephora (Merisma) multifida** Klotzsch.
Ad ligna putrida prope Vaxardo [Fajardo].

11. POLYPORUS VELUTINUS Fr.
In arbor. prope Humacao.

12. POLYPORUS UNICOLOR de Schweinitz.
Ad ligna demortua prope Humacao.

13. POLYPORUS SANGUINEUS Fr.
Ad arbor. prope Vaxardo [Fajardo].

14. POLYPORUS TRICHOLOMA Montagne.
Prope Humacao.

15. POLYPORUS MODESTUS Kze.
Ad arbor. prope Vaxardo [Fajardo].

16. LEONTINUS NIGRIPES.

17. SCHIZOPHYLLUM COMMUNE.

II. THE SINTENSIS COLLECTION.

CHYTRIDIACEAE.

OLPIDIELLA UREDINIS Lagerh.
On uredo of *Puccinia levis*, near Maricao. Nov. 12, 1884.

USTILAGINACEAE.

Doassansia Sintensii Bresadola.
On "Cedro-matshos," Utuado.

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SCHROETERIA CISSI (DC.) De Toni.
Collected at various places on *Cissus*.

Cintractia Krugiana Magnus.
On *Rhynchospora gigantea* near Manati at Laguna Tortugero.

UREDINACEAE.

PUCCINIA HETEROSPORA B. & C.
On *Sida* and *Abutilon* on the south side of the island.

PUCCINIA ARCHAVALETAE Speg.
On *Cardiospermum Halicacabum*, Guanica.

PUCCINIA SPERMACOCES Berk. & Cook.
On *Diodia rigida*, Salinas de Cabo Rojo.

PUCCINIA LEVIS (Sacc. & Bizz.) Magnus.
On *Manisurus granularis* at Maricao.

AECIDIUM RIVINAE Berk. & Cook.
On *Rivina humilis* near Fajaid [Fajardo?] in cultivated ground.

AURICULARIACEAE.

AURICULARIA AURICULA JUDAE (L.) Schroet.
Mte. Bahaja, Adjuntas.

AURICULARIA DELICATA (Fr.) Hennings.
Mte. Florida, Barceloneta.

DACRYOMYCETACEAE.

GUEPINIA PALMICEPS Berk.
On old tree trunks, Quebra grande, Yabucoa.

THELEPHORACEAE.

STEREUM LOBATUM Fr.
On trees in primaeval forests, San Patricia, Jayurga.

HYMENOCHAETE CACAO Berk.
On tree trunks, Adjuntas.

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HYMENOCHAETE DAMAECORNIS (Link.) Lev.
On exposed tree roots, Adjuntas.

HYDNACEAE.

HYDNUM MULTIFIDUM (Klotzsch) Hennings.
On trees in primaeval forests, Aibonito, Adjuntas. [This is *Thelephora multifida* of the Schwanecke collection.]

POLYPORACEAE.

GANODERMA LUCIDUM (Leys) Pat.
On tree trunks, Luquillo mountains.

GANODERMA AMBOINENSE (Lam.(Pat.
Yabucoa.

GANODERMA AUSTRALE (Fr.) Pat.
On tree trunks, Sabana Grande, Cabo Rojo.

FOMES IGNIARIUS (L.) Fr.
On tree trunks.

FOMES LIGNEUS Berk.
On tree trunks.

FOMES RUGULOSUS Lev.
On tree trunks, Cayey—"Maton arriba."

FOMES HEMILEUCUS B. & C.
On tree trunks.

POLYPORUS SULPHUREUS (Bull.) Fr.
Lares.

POLYPORUS GILVUS var. SCRUPOSUS (Fr.) Hennings.
Cayey—"Mada arriba."

POLYPORUS WARMINGII Berk.
Guayabota near Yabucoa.

POLYSTICTUS MEMBRANACEUS (Swartz) Berk.
On trees near Yabucoa.

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POLYSTICTUS SANGUINEUS (L.) Mey.
On old tree trunks near Coamo.

POLYSTICTUS OCCIDENTALIS Klotzsch.
On tree trunks, Barceloneta.

POLYSTICTUS HIRSUTUS Fr.
On tree trunks, Barranquitas.

POLYSTICTUS UMBONATUS Fr.
Utuado.

TRAMETES ELEGANS (Spr.) Fr.
On tree trunks.

TRAMETES HYDNOIDES (Sw.) Fr.
On tree trunks.

GLOEOPORUS CONCHOIDES Mont.?
On tree trunks.

AGARICACEAE.

SCHIZOPHYLLUM ALNEUM (L.) Schroet.
On tree trunks near Adjuntas.

LENTINUS LECOMTEI Fr.
In primaeval forest, Lares.

LENTINUS CRINITUS (L.) Fr.
On tree trunks.

Cortinarius (Dermocybe) Sintensii Hennings.
On tree trunks.

OMPHALIA LAPIDESCENS (Horaninow) Cohn & Schroet.
Lares.

PHALLACEAE.

DICTYOPHORA PHALLOIDEA Desv.
On old trees in coffee woods, Adjuntas.

CLATHRUS CANCELLATUS (Tourn.) Sacc.

CLATHRUS COLUMNATUS? Bosc.
Yabucoa.

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LYCOPERDACEAE.

TYLOSTOMA EXASPERATUM Mont.
On wood near Lares.

GEASTER MIRABILIS Mont.
On rotten wood, Adjuntas.

PYRENOMYCETES.

MELIOLA AMPHITRICHA Fr.
On *Hedwigia balsamifera.*

LIZONIA JACQUINIAE Briard & Har.
On leaves of *Jacquinia armillaris.*

XYLARIA INVOLUTA (Klotzsch) Cooke.
On old tree trunks.

XYLARIA SCOPIFORMIS Mont.
On old tree trunks, Utuado.

XYLARIA GOMPHUS Fr.
On tree trunks.

NUMMULARIA GLYCYRRHIZA (Berk. & Cook) Sacc.
On wood.

Melanomma nitidulum Bresadola.
On dry bark-covered twigs, Cayey.

Microthyrium Urbani Bresadola.
On twigs of *Schaefferia frutescens.*

DISCOMYCETES.

MIDOTIS HETEROMERA Mont.
On wood, Mt. Cienega.

SPHAEROPSIDEAE.

EPHELIS MEXICANA Fr.
In inflorescence of grass, Utuado.

DARLUCA FILUM (Biv.) Cast.
On leaves of *Kyllinga caespitosa.*

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NOMINA NUDA.

Is there such a thing as a *nomen nudum?* According to certain evidence before the writer, such a thing is almost impossible.

In the second fascicle of the newer Synoptical Flora, Dr. Robinson credits me with the publication of *Montia arenicola*, and scores me for carelessly publishing the combination in an undated and unpaged plant list. The list in question was sent out during the latter part of 1896, and in it was enumerated part of the collections obtained that year in northern Idaho and offered for sale. The species in question was listed thus:

"2954. Montia arenicola (Henderson) Heller.

The intention was to properly publish the combination at an early date, but certain factors presented themselves for consideration in that connection, and before an opportunity could be found to work them out, Mr. Howell properly published the combination in his Flora of Northwest America. Until Dr. Robinson's remarks on the subject came to my notice, I was not aware that the mere appearance of a name in print, without accompanying description or synonymy, could constitute publication. The plant in question was originally published as a *Claytonia*, but so far as my list shows, it might have been *Acer* or *Solidago*.

Eleven new species are designated in that list, but none of them had been characterized when the list was issued. Were they also published in that list? If so, No. 3269. *Hydrophyllum albifrons*, characterized more than a year afterwards in the Bulletin of the Torrey Botanical Club, **25**: 267. 1898, becomes a synonym, as it was listed under another name. *Mimulus peduncularis* Dougl., would also have to be credited with a synonym, as it was listed and distributed under No. 3330 as a new species.

According to the Scriptures, one can be just as guilty of wrongdoing by thinking evil as if caught red-handed in the

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deed. Therefore, why not apply the same principle to nomenclature? If by printing a bare plant name I am guilty of being the author of that name, why not think new names and afterwards claim that they were published?

In Watson's Bibliographical Index, page 249, under *Petalostemon violaceus*, occurs the following:

"Var. **pubescens.** Gray, Pl. Lind. 176; Pl. Fendl. 33; Pl. Wright. 1. 46."

Referring to the Boston Journal of Natural History, **6**: 176. 1850 (Plantae Lindheimerianae), we find this under the first footnote:

"Petalostemon virgatum, *Scheele*, in Linnaea, 21, p. 461, is plainly the No. 42, *Pl. Lind.* and No. 137, *Pl. Fendl.*, viz. a pubescent variety of *P. violaceum*, perhaps connecting that species with *P. decumbens*. The leaves in some specimens are indeed 7-foliolate, in others both 5-foliolate and 3-foliolate."

If the term "a pubescent variety" is equal to the publication of "var. *pubescens*" why not cite it as published where the plant is first mentioned, namely in Bost. Journ. Nat. Hist. **5**: 215. 1845? Here it is mentioned as "42. P. VIOLACEUM *Michx.*: a pubescent variety."

In Mem. Am. Acad. II. **4**: 33. 1849 (Plantae Fendlerianae), we have under No. 137: "P. VIOLACEUM Michx. *Fl. 2. p. 50. t. 37. f. 2.*—a pubescent variety; the calyx very silky-villous. Five miles west of Las Vegas, New Mexico; August."

In Pl. Wright. **1**: 46. 1852, this record occurs:

"117. PETALOSTEMON VIOLACEUM Michx., var. PUBESCENS (*Gray Pl. Fendl. p.* 33). P. virgatum, *Scheele in Linnaea*, 21. *p.* 461. Prairies, Austin, Texas.—From the Snake Country, in the interior of Oregon, Mr. Burke sent to Sir Wm. Hooker dwarf specimens of this variety, and from the Black Hills of the Platte both Burke and Gordon have sent others, with densely pubescent leaves and even tomentose stems, which I cannot otherwise distinguish from this species. Some specimens, hav-

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ing long acuminate bracts, approach too near to P. decumbens, which is further distinguished chiefly by its broader leaflets."

Here at last we have specific mention of a "var. *pubescens*" of "*Petalostemon violaceum*," but not in the place first cited by Watson, and even Gray himself refers it back to "*Gray, Pl. Fendl. p.* 33," where it does not occur. Here, in the Plantae Wrightianae, we also actually have publication, for the name is designated as equivalent to "P. virgatum, *Scheele in Linnaea* 21. *p.* 461."

But did Asa Gray and Sereno Watson recognize the true application of the name—a substitute for *P. virgatum* Scheele, an excellent species, but the name a homonym—or did they mean to apply it to the plants collected by Lindheimer, Fendler, Wright, Burke, and Gordon?

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FOUR SOUTHWESTERN PLANTS.

AQUILEGIA DESERTORUM (Jones) Cockerell.

D. T. MacDougal's No. 327, collected in Walnut Canon, near Flagstaff, Arizona, July 23, 1898, which grew "in clefts and on ledges of limestone cliffs," is evidently of this species. It was distributed by me as a new species. Marcus E. Jones first collected it at Flagstaff, August 29, 1884, "growing in crevices of rocks near springs."

At the time the determination was made, I had no species at hand to which the plant could be referred, and overlooked the then recently published *Aquilegia formosa* var. *desertorum* Jones, Cont. West. Bot. 8: 2. 1898. The plant was named as a species in 1900 by Professor T. D. A. Cockerell, in "The Southwest," a journal published at the Normal School, Albuquerque, New Mexico.

Draba viridis

Perennial? much branched from the root: stems slender, 15-25cm. high, simple or sparingly branched above, green, scabrous, the short hairs both simple and stellate, leafy up to the inflorescence: leaves 1-2cm. long, 3-7mm. wide, thin but firm, deep green in the dried state, ovate or ovate-lanceolate, acutish, or the uppermost acute, sessile, roughened by a short, stellate pubescence: calyx green, pubescent with short scattered hairs, the lobes oblong, obtuse, 2mm. long: corolla yellow, the petals oblong, twice the length of the calyx: pedicels slender, ascending, bearing a twisted pod of equal length, which is pubescent, or nearly glabrous when mature, tipped with a slender style nearly 2mm. long.

The type specimen in the herbarium of Columbia University, was collected by Dr. T. E. Wilcox, at Fort Huachuca, Arizona, July, 1893. This species is easily separated from its relatives by the slender, almost simple stems, and the remarkable green of the stem, leaves and calyx.

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The above description was written in 1899, for insertion under the sub-head "Some long-styled Species of Draba," in my article in the Bulletin of the Torrey Botanical Club for December, 1899, but omitted until comparison could be made with a related plant.

Petalostemon pubescens (A. Gray)

Petalostemon violaceum var. *pubescens* A. Gray, Pl. Wright. **1**: 46. 1852.

Petalostemon virgatum Scheele, Linnaea, **21**: 401. 1848; not Nees, 1839.

Kuhnistera pulcherrima Heller, Cont. Herb. F. & M. Coll. **1**: 50. *pl. 2.* 1895.

Petalostemon pulcherrimum Heller, Bull. Torrey Club, **26**: 593. 1899.

This beautiful species has been burdened with much synonymy mainly by the writer, who may perhaps be pardoned for not earlier understanding the true place of publication of the first available name, when viewed in the light of the preceding article.

Vernonia Guadalupensis

Finely and closely pubescent: stems simple, erect, about 7 dm. high, purplish, striated, leafy throughout: leaves numerous, elliptic-lanceolate and somewhat scythe-shaped, 5-9cm. long, maximum width 2cm., acuminate, more or less shortly spinulose-denticulate, sessile or nearly so, bright green and sparingly pubescent above, pale below with a soft, close pubescence, prominently veined, the midrib yellowish: heads numerous but not closely crowded, usually rather long-peduncled: involucres campanulate, cobwebby pubescent and resiniferous, 5-7mm. high, 4-5mm. broad, the bracts oblong, or the lower ones ovate-oblong, purple-edged, acute with a short keel-like acumination, the tips erect or slightly spreading: achenes glabrous, somewhat resiniferous: pappus purple, or the upper part merely tawny.

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My No. 1909, collected near Kerrville, Kerr county, Texas, June 22, 1894, on gravelley banks of the Guadalupe river, and distributed under the above name. Acting upon the advice that it was *V. fasciculata* Mich., I accordingly treated it as such in my account of the season's work, published in Cont. Herb. F. & M. Coll. 1: 100. 1895. The maximum form, represented by the type specimen, does indeed resemble *V. fasciculata* in leaf outline, but in little else. It seems to be the same as Berlandier's plant, mentioned in the Synoptical Flora under *V. Lindheimeri* as a possible hybrid between that species and *V. Baldwinii*. It was growing in company with *V. Lindheimeri* and *V. interior* Small, which latter was distributed as *V. Baldwinii* and later listed as *V. Drummondii*.

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SOME INACCURACIES—I.

In our various botanical works there are occasional errors which are copied and passed on through successive publications. It is the intention to record them in these pages as they are brought to my notice from time to time.

AMORPHA TEXANA Buckley, Proc. Acad. Phila. **1861**: 452. 1861.

Amorpha subglabra Heller, Cont. Herb. F. & M. Coll. **1**: 48. 1895.

In publishing upon his Texan collection of 1894, the writer inexcusably makes Asa Gray the author of a variety *subglabra* of *Amorpha fruticosa*, listed in Bost. Journ. Nat. Hist. **6**: 174. 1850 (Pl. Lindheimerianae). The "var. subglabra" is there used merely as a descriptive term, for in that work all plant names are printed in small capitals. Whether the following in Pl. Wright. **1**: 50, refers to it as a varietal name, I do not know, but it can hardly be considered as published there: "To this species [*A. laevigata*] must belong the '†A. fruticosa, var. subglabra,' from Fredericksburg, *Pl. Lindh. 2. p.* 174."

In Watson's Bibliographical Index, page 213, we have the following under *Dalea nana:*

"Var. **elatior.** Gray, Pl. Wright. 1. 46. Porter, Fl. Col. 22."

The following is in Plantae Wrightianae at the place cited: "124. D. NANA, var elatior (pedalis), foliolis sublinearibus."

The word "elatior" is plainly used here as a descriptive term, for here too all plant names, both specific and varietal, are printed in small capitals.

In the second citation, "Porter, [Synopsis] Fl. Col. 22," we have "DALEA NANA, Torr., var. ELATIOR Torr. *Pl. Wright.* 1, p. 46," followed by a description of ten lines. The name *elatior* is certainly published here by Porter, and credited to Torrey.

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Volume I. No. 3

MUHLENBERGIA

LOS GATOS, CALIFORNIA, JANUARY 9, 1904

[All unsigned articles in this journal are by the Editor, and the types of all new species described by him are deposited in his private herbarium, unless otherwise stated.]

NEW LABIATES FROM CALIFORNIA.

Scutellaria Sanhedrinsis

Stems slender, simple, or sometimes branching from the base, 2dm. high or less, strongly puberulent throughout, leafy throughout, but the internodes distant, 1.5-2.5cm.: leaves elliptical-oblong, 1-2cm. long, 5mm. or less in width, the base narrowed into a short petiole, or the uppermost sessile, the end obtuse, yellowish veins prominent only near the base: corolla violet, somewhat curved at the base, 2cm. long, gradually enlarged, the top of the throat 5mm. across; short pubescent externally and on the inside of the lower lip.

No. 5894, collected July 15, 1902, in diy, gravelley ground above Summit Lake, Mt. Sanhedrin, Lake county, at an elevation of about 6000 feet. Like several other members of the genus, the plants appear in tufts from the slender underground rootstocks, and are easily broken off at the base.

This species is one of the forms which has long passed as *S. angustifolia* Pursh, of which an original specimen collected by Lewis on the "Kooskoosky" river, is preserved in Philadel-

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phia in the herbarium of the Academy of Natural Sciences. This is a much larger plant than ours in every way, with a corolla of somewhat different shape, and of a deeper violet color. Our No. 3150, collected in 1896 along the Clearwater or "Kooskoosky" river, about seven miles east of Lewiston, Idaho, is typical *S. angustifolia*, from very near the place where Lewis collected the original.

Scutellaria viarum

Stems about 5dm. high or less, from interlaced rootstocks, sharply quadrangular, purplish, especially below, the whole plant cinereous puberulent: lower internodes twice the length of the leaves, the upper no longer or shorter than the leaves: lowest leaves ovate-elliptical, 2cm. long, on a petiole of 5mm., purplish beneath, veins prominent beneath, margins irregularly crenate-serrate; leaves of the middle part of the stem similar but larger, those of the upper part elliptical, entire, reduced in size, not purplish beneath: corollas pale violet blue, 1.5cm. long, very slightly curved at base, gradually enlarged, the throat 4mm. wide across the top, externally pubescent with short hairs; lower lip 4mm. long, only slightly outcurved, white woolly within; the sinus between the lips prominently triangular-toothed; upper lip slightly incurved, a little over 2mm. long: pedicels 3mm. long.

No. 5786, collected along the roadside west of Windsor, near the Russian river, Sonoma county, June 27, 1902. If previously collected, it has, like the last, passed as *S. angustifolia.*

Agastache glaucifolia

Stems simple or with an occasional short secondary flowering branch, 1 meter or more high, prominently angled and deeply channeled, puberulent, leafy throughout; the internodes distant, often 1dm. or more: leaves triangular-ovate, about 5cm. long and 4cm. wide, truncate or somewhat cordate at base, acute or shortly acuminate, regularly crenate, above bright green, be-

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low whitened with a dense short tomentum, interspersed with small shining resinous dots; veins rather prominent; petioles slender, the base enlarged, often over 2cm. long on the larger leaves, the upper leaves shorter petioled, or the last pair sessile: flowering spike dense, not interrupted: calyx about 8mm. long, the tube bright green, short-pubescent and resinous dotted, the lanceolate-acuminate lobes 2mm. long, pale purple like the flowers: corollas one-third longer than the calyx, the stamens and style long-exserted.

The type is No. 5792, collected June 28, 1902, on the west side of Knight's Valley, Sonoma county, along the road leading to Mark West Springs, growing among grass and shrubs. No. 5900, collected about Summit Lake, near the summit of Mt. Sanhedrin, Lake county, July 15, 1902, is also of this species, as well as No. 7077, collected about the lower end of Donner Lake, Nevada county, August 1, 1903. The two last mentioned stations are each at elevations of about 6000 feet, the first in the Coast Range, and the latter on the eastern slope of the Sierras.

A. glaucifolia has hitherto passed in California for *Lophanthus urticifolius* Benth., which species, originally collected by Douglas "in America boreali-occidentalis ad flumen Lewis et Clark," is described as a branched glabrous plant, with obtuse leaves, or only the upper ones acutish. It may not occur in California, as it belongs to an entirely different geographical range, few species from which occur within our borders. Our species has a strong, disagreeable odor. The whitened under surfaces of the leaves, whence the specific name, is less prominent in the dried than in the living state.

Stachys rivularis

Stems 4-6 dm. high, deeply channeled between the angles, especially below, pubescent with short spreading hairs: leaves elliptical-oblong, obtuse, or the uppermost lance-oblong, acutish, crenate, the larger ones on the middle part of the stem 6-8cm. long, 3.5-4cm. wide, both sides more or less pubescent with ap-

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pressed hairs, the margins ciliate, several of the lower pairs crowded, their winged petioles about 1cm. long; those of the middle and upper part of the stem on successsively shorter petioles, the internodes distant, ordinarily longer than the leaves: inflorescence long-spicate, often 2dm. long, whorls distant, usually 3-5 flowered, the lowest pair of floral leaves two or three times longer than the calyx, the others becoming successively shorter, the uppermost shorter than the calyx: calyx funnelform, maximum length about 6mm., width at top 4mm., rather densely pubescent with soft spreading hairs, the broad, ovate lobes tipped with prominent spines, ribs not prominent: corollas a little more than twice the length of the calyx, pale, the tube well exserted, upper lip pubescent on the outside, the broad middle lobe of the lower lip commonly slightly deflexed, the lateral lobes rather inconspicuous.

No. 7114, collected August 6, 1903, in moist places on the banks of the Truckee river, one mile above Truckee, Nevada county. This may be the plant referred to by Professor Greene in Pittonia, **3**: 341, under *S. littoralis* as a form, but it seems to be distinct from that species.

Monardella involucrata

Suffrutescent and usually decumbent at base, tall, 6dm. or less, pubescent with soft spreading hairs: leaves broadly ovate, the largest 3cm. long, 2cm. wide, on slender petioles 1cm. long, acutish, rarely obtuse at the apex, rounded or truncate at base, prominently veined, moderately pubescent on both sides with appressed hairs, the margins ciliate and obscurely crenate-serrate; petioles pubescent with spreading hairs: heads large, over 2cm. cross: bracts in several series, the outer simply a pair of deflexed leaves, the others successively smaller and more acute, the innermost often linear, all prominently veined and pubescent on the outside, the margins ciliate: calyx densely pubescent throughous with spreading hairs, somewhat narrowed at the apex, the teeth short, acute: corollas deep rose-purple, the tube pubescent externally.

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Collected June 22, 1903, near Del Monte, Monterey county, along the road leading to Salinas, growing among grass and shrubs. The species is remarkably tall, and differs from its near relatives in having several series of bracts subtending the flowers.

Monardella mollis

About 3dm. high, decidedly shrubby and branching below, the branches erect or ascending, the old lower portion covered with a flaky greyish bark, the young upper part brown, pubescent with soft spreading hairs: leaves conspicuously petioled (2-3mm. long), broadly ovate, about 1.5cm. long, 1cm. wide, slightly serrate, rather abruptly narrowed at base, acute or acutish at apex, densely pubescent on both faces with tangled, appressed hairs, the margins ciliate; resinous dots few and small: bracts in a single series, narrowly lanceolate, 7mm. long, less than 3mm. wide at the base, the tips purplish, these, as well as the calyx and tube of the corolla pubescent with spreading hairs: corollas lavender, a litile over 1cm. long, twice the length of the calyx. Plant scarcely aromatic.

The type is No. 5725, collected June 19, 1902, in Marin county on Tiburon peninsula along the road skirting the Bay.

To this species is referred No. 5791, collected on the west side of Knight's Valley, Sonoma county, on the road leading to Mark West Springs. It is less hairy, especially on the calyx and bracts, and has larger, darker flowers.

Monardella coriacea

Suffrutescent, 3-4dm. high, usually branched, smooth and light brown below, puberulent and pale above, rather densely leafy throughout: leaves shortly petiolate, coriaceous, the smaller ones on the lower and upper parts of the stem and branches elliptic, the larger ones ovate, 2-3cm. long, all acute, puberulently roughened and prominently veined, conspicuously punctate beneath, faintly so or not at all above, commonly with a

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secondary fascicle of small leaves in the axils: heads large, 2cm. or more across: bracts ovate-lanceolate, a little more than 1cm. long, veins prominent: calyx about 1cm. long, the tube smooth, the narrowly lanceolate teeth 2mm. long, white-ciliate: corollas deep lavender, more or less resinous dotted.

No. 5812, collected July 8, 1902, on sandy, gravelley banks of the Russian river at Healdsburg, Sonoma county. The plant has an aromatic, thyme-like odor.

Monardella pallida

Stems simple or almost so, appearing in dense clusters from the rootstocks, 3dm. or slightly more in height, purplish-brown at the base only, cinereous, especially above: leaves about 3cm. long, either the lowest spatulate-oblong, and the others oblong and a little less than 1cm. wide, or ovate or elliptical, 1.5cm. wide, with rounded or almost truncate base, the lowest on petioles of 5-8mm., bright green above, cinereous below, pale midribs prominent, small resinous dots numerous; nearly all the axes bearing secondary clusters of small leaves: heads 2cm. across, appearing as if long-peduncled—5cm. or more: bracts ovate or ovate-oblong, prominently veined, more or less purplish, pubescent with white hairs, especially on the margins; in two series, the outer sometimes constricted at the middle, their tips green and foliaceous: calyx strongly pubescent, especially the teeth, which are densely hirsute ciliate: corollas pale, with a pink or purplish tinge, the tube slightly pubescent.

No. 6959, collected along the foot of the ridge on the south side of Donner Lake, Nevada county, July 17, 1903. The species is somewhat variable, the foliaceous-tipped bracts apparently being more common on the broader leaved forms. It is a common plant in the Donner Lake region, occurring in abundance on the surrounding ridges even to the summits, especially on northerly slopes, where it grows in gravel or among stones.

Monardella pinetorum

Suffrutescent only at base, the slender branches mainly from the rootstock, 2-2.5dm. high, pale brown or greenish, pu-

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berulent or short pubescent throughout: leaves oblong-lanceolate, acute, or some of the lower oval and obtuse, about 2.5cm. long, including the slender petiole of 3-4mm., rather pale on both sides, but glabrous or nearly so above, beneath short pubescent and covered with small resinous dots, the pale midvein very prominent, the margins obscurely ciliate, entire, somewhat revolute: upper internodes remote, twice the length of the leaves, the lower equalled by the leaves: heads medium sized, less than 2cm.: involucral pair of leaves about half the width of the others; bracts broadly ovate, a little less than 1cm. long, about 6mm. wide, obtuse or barely pointed, pinkish, prominently fenestrate veined, short pubescent outside, ciliate, more or less marked with dark resinous dots, as is the tube of the calyx: calyx pubescent throughout with somewhat spreading hairs: corollas rose-purple, their pubescent tubes little exserted beyond the calyx. The plant has a pleasant aromatic odor.

No. 5909, collected July 19, 1902, on the southern slope of Mt. Sanhedrin, Lake county, above the sawmill, in dry gravelley ground among pine trees. It was distributed as *Monardella odoratissima* Benth., a species which probably does not occur in California.

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A NEW LUPINE FROM CALIFORNIA.

By J. W. Congdon.

Lupinus deflexus

Annual: plant of a dull light green color, softly pubescent, at length partially glabrate; stems simple or with several large erect branches from the base: leaves thin, on slender, somewhat longer petioles; leaflets oblong-obovate or oblong-spatulate: flowers in racemes terminal on stem and branches which are at first about two inches long, but lengthening finally, sometimes to a foot, scattered, dull white, turning pinkish, on slender, pilose pedicels: lips of the calyx small and narrow, strongly pilose: standard reflexed; wings very broad and rounded, almost hemispherical; the falcate keel somewhat longer than the standard: pods bent down toward the stem after flowering, three-fourths of an inch long, oblong, thin-walled, strongly ribbed between the 5-7 seeds, tipped with the permanent style: seeds hardly a line in diameter, smooth, unspotted, dull, flattish, with strongly protuberant center.

This lupine, belonging to the same group with *L. Stiveri*, was found in April and May, 1903, in a small sandy tract on Mariposa creek, about four miles below Mariposa.

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WESTERN SPECIES, NEW AND OLD.—I.

Veratrum tenuipetalum

Lower part of plant not seen, but apparently stout; upper part of the stem somewhat pubescent with short woolly hairs: leaves bright green, glabrate or slightly pubescent with short hairs, the upper ones lanceolate, acuminate: inflorescence rather lax, the branches ascending: perianth presumably white, about 8mm. long, the segments oblong-lanceolate, narrowed at the base, 1mm. or a little more in width.

The type, in the U. S. National Herbarium, was collected by Dr. Scoville in Colorado in 1870. Only the inflorescence and a single leaf from the upper part of the stem is represented on the sheet. It is a species remarkable for the narrowness of the perianth segments. The original label bears the name of *Veratrum album*, an Old World species not found in this country. To this species is also referable a specimen collected by Carl F. Baker at Rabbit Ear Pass, northern Colorado, altitude 9500 feet, July 20, 1896.

For some years the writer has been of the opinion that *Viorna* should be restored to generic rank, and had under consideration the transferring of our species long included under *Clematis* as a section. Nearly all of the species belong to the southeastern part of the United States, and those have recently been transferred to their proper genus by Dr. Small in his admirable "Flora of the Southeastern United States."

Besides *V. Arizonica*, there is another species, found in eastern Washington and northern Idaho which I have collected, and which is of peculiar interest. For many years *Clematis hirsutissima* Pursh, has traditionally been associated with the plant called *Anemone patens* var. *Nuttalliana*, but some years ago a set of the plants collected by Lewis, from which Pursh described many new species, among them *Clematis hirsutissima*,

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was discovered in Philadelphia, and a paper concerning it published by the late Thomas Meehan. Among the plants is a good flowering stalk of the plant called *Clematis Douglasii*, which not only fits the description of Pursh's species, but is found more or less abundantly in the very region where Lewis collected the type. On the contrary, *Anemone patens* var. *Nuttalliana*, or *Pulsatilla hirsutissima*, as it has recently been called, is found very sparingly if at all west of the Rocky mountains. With such evidence, *Clematis Douglasii* should undoubtedly be treated as a synonym.

Viorna hirsutissima (Pursh)

Clematis hirsutissima Pursh, Fl. **2:** 385. 1814.
Clematis Douglasii Hook. Fl. Bor. Am. **1:** 1. *pl. 1.* 1830.

Viorna Arizonica

Clematis Arizonica Heller, Bull. Torr. Club, **26:** 547. 1899.

Ranunculus Blankinshipii (Robinson)

Ranunculus canus var. *Blankinshipii* Robinson, Syn. Fl. **1:** Part 1. 35. 1895.

This is certainly quite distinct from *R. canus* when compared with typical specimens of that species. Besides differing considerably in gross appearance, *R. Blankinshipii* has a very large, thin, hispid-papillose akene, the body of which is broadly ovate, tapering gradually to a triangular, almost straight point. In *R. canus* the akenes are smaller, sub-rotund, with a short, strongly hooked beak.

Holodiscus glabrescens (Greenm.)

Spiraea discolor var. *glabrescens* Greenm. Erythea, **7:** 116. 1899.

The type of *Spiraea discolor* Pursh, was collected by Lewis "on the banks of the Kooskoosky" or Clearwater river, in northern Idaho, where the writer has seen it in abundance. In fact, it is abundant throughout northern Idaho and eastern Washington, but only at elevations of probably less than 2000 feet, pre-

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ferring stream banks. It is a large plant in every way, and a pretty sight when laden with the large clusters of creamy flowers. How any one can can confuse with it even in the herbarium these other species of quite different appearance and different altitudinal and geographical range, seems strange to the field worker. The precedent for confusing them seems to have originated with Torrey and Gray, who in Fl. N. Am. **1**: 416, have mixed them very much indeed, not even distinguishing between *discolor* and *dumosa*, and they seem to have had typical specimens of both.

Holodiscus saxicola

Low shrub about 10dm. high, much branched: bark on the old branches grey, exfoliating on the growth of the second season, the young bark underneath brown; growth of the season pale with woolly hairs: leaves broadly ovate, almost orbicular in outline, somewhat cuneately narrowed into the very short, margined petiole, rounded and obtuse, not lobed, about 12mm. long by 10mm. in width, the teeth of the crenate margins blunt or acutish tipped, rather bright green and sparingly pubescent above, pale underneath with a short tomentum, as well as clothed with longer hairs on the prominent veins: panicles lanceolate or ovate-lanceolate in outline, sometimes 1dm. long by 5cm. wide on young shoots: peduncles and pedicels pubescent with soft spreading hairs: the ovate, acutish calyx lobes less than 2mm. long, pubescent, but less so than the peduncles and pedicels: petals almost white, broadly ovate, blunt, 2mm. long: pistils densely white bearded below, the hairs about as long as the calyx.

No. 7160, collected among granite rocks at Donner Pass, Nevada county, California, August 12, 1903, altitude 7000 feet. It is abundant thereabouts, and occurs at considerably higher elevations, as well as down to perhaps 6000 feet. In the Flora Franciscana, 58, Professor Greene also confuses this with the far northern species *discolor*, although he gives a character to the leaves of "above the middle pinnately toothed or lobed, the

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lobes when present entire," a feature apparently not found in my type of *H. saxicola.*

Apparently referable to this species is my No. 5911, collected on the southern slope of Mt. Sanhedrin, Lake county, California, July 19, 1902, distributed as *Holodiscus dumosa*, although at the time I suspected it would prove to be an undescribed species. These Lake county specimens have rather longer, more cuneate leaves, which are more pubescent, being quite silvery underneath; the panicles are somewhat denser, and the flowers deeper colored. It grew at an elevation of 5000 feet or more, in a region which has yielded a number of Sierran species, though separated by the broad reaches of the Sacramento Valley.

Boisduvalia sparsiflora

Simple or branched, 2-5dm. high, the branches when present beginning from the base, more or less outcurved, then ascending, nearly 3dm. long in large plants, but always shorter than the central stem, pubescent with short appressed hairs, or above somewhat woolly: leaves on the lower parts of the main stem and branches linear-lanceolate, entire, 3-4cm. long, 5mm. wide; those of the upper parts shorter, with an ovate base, all acuminate-pointed, shortly appressed pubescent on both sides: floriferous throughout, a flower usually in the axil of each leaf: petals rose-purple, 5mm. long, twice the length of the calyx: capsules oblong, about 1cm. long, 2-3mm. wide, slightly curved, a little narrowed at both base and apex, appressed pubescent: seeds pale greyish-brown, smooth and glabrous.

No. 7021, collected July 25, 1903, in moist ground at the lower end of Donner Lake, Nevada county, California. A species apparently related to *B. stricta.*

Boisduvalia imbricata (Greene)

Boisduvalia densiflora var. *imbricata* Greene, Fl. Francisc. 225. 1891.

As Professor Greene says, this is indeed "a plant of very different aspect" from *B. densiflora*, which has been stretched

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so as to include about everything imaginable in the genus. The original of *B. densiflora*, as figured and described in the Botanical Register, is different from anything thus far found in middle California, but I have seen a specimen from Mendocino or Humboldt county which resembles it.

Linanthus longitubus (Benth.)

Gilia longituba Benth. Pl. Hartw. 324. 1849.

This has been considered a mere form or variety of *L. parviflorus*, but specimens recently collected by me at the type locality convince me that it should be held distinct. Both the rose-purple (No. 6673) and yellowflowered forms (No. 6699) were collected. *L. parviflorus* was not observed in the vicinity. The following is the original description by Bentham:

"1850 (11). GILIA (Leptosiphon) *longituba*, sp. n., humilis, foliis 3-5-fidis segmentis inferiorum oblongo-linearibus cuneatisve superiorum linearibus, calycis laciniis linearibus, corollae tubo gracillimo foliis floralibus 4-plo, limbo suo plus 5-plo longiore.—Herba 3-4 pollicaris. Corollae tubus 15-16 lin. longus, limbus vix 3 lin., purpurascens v. flavescens fundo aurea.—In sylvis prope Monterey."

Gilia pallida

Erect, branched from near the base, 5-6dm high, the stems glabrous: leaves obovate in outline, about 5cm. long, dissected into rather remote, narrow, 3-lobed segments, each lobe bearing a short cusp, sparingly floccose along the petiole: heads on long slender stalks of 1dm or more: calyx only sparingly floccose, about 2mm. long, the lobes lanceolate, the slightly keeled green midvein ending in a sharp cusp, the margins hyaline: corollas pale lavender or almost white, the segments linear, about 4mm. long, 1mm. wide, slightly longer than the white anthers, but shriveled and curled when dry, thus exposing the anthers, which then appear exserted.

The type is No. 5739, collected at the "Petrified Forest," Sonoma county, California, June 23, 1902. No. 5998, mostly in

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the fruiting stage, collected near the summit of Mt. Sanhedrin, Lake county, California, July 28, 1902, is also referred here. It is rather common in Sonoma county, and probably elsewhere in that section of the State. Being a near relative of *G. staminea* Greene, it may be sought for in collections under that name.

Antirrhinum appendiculatum (Durand)

Antirrhinum Coulterianum var. *appendiculatum* Durand, Pac. R. R. Rep. **5**: 11. *pl. 11.* 1855.

Antirrhinum vagans A. Gray, Proc. Am. Acad. **7**: 373. 1867.

No. 5788, collected near Mark West Springs, Sonoma county, California, June 28, 1902. It is not uncommon in that part of the State, although the original came from the upper San Joaquin Valley, not far from Bakersfield.

Pentstemon intonsus

Frutescent, much branched, 2-4dm. high: bark of the old branches greyish, rough, that of the season brown; glabrous below, short pubescent or puberulent above, leafy up to the inflorescence: leaves commonly oval in outline, 1-1.5cm. long, 3-5mm. wide, or on vigorous young shoots 3cm. long, including the petiole of 5mm., 1.5cm. wide, these latter obscurely serrate; all pubescent underneath with short hairs, veins rather prominent, margins slightly inrolled, the base obliquely narrowed, apex acutish: peduncles and pedicels of the corymbiform cyme as well as the calyx beset with numerous short-stalked glands: calyx about 7mm. long, the lobes narrowly lanceolate, barely 2mm. wide at base: corollas light crimson, 2-3cm. long, puberulent, the tube nearly tubular, only slightly dilated above, about 5mm. across, upper lip erect, the lower spreading, its lobes oblong, about 1cm. long, acutish: sterile filament *bearded on one side*: stamens and styles included.

No. 6020, collected August 1, 1902, along Eel river near Hullville, Lake county, California, growing on rocks. It was also seen near the summit of Mt. Sanhedrin. This is one of the

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forms found in herbaria under the name of *Pentstemon corymbosus* Benth., a species which perhaps has never been re-collected, although many specimens are labeled as such. It was originally collected somewhere in California by Coulter, and described by Bentham as having a *glabrous* sterile filament. In this particular, as well as in several others, it does not agree with our plant or the *P. corymbosus* of the Synoptical Flora. The following is the original description:

"P. CORYMBOSUS (Benth. in lit.); glaber vel pubescens, caule humilis decumbente, foliis caulinis brevissime petiolatis oblongis obtusis subdentatis, cyma terminalia nuda trichotoma multiflora corymbiformi, corollae tubo tenui calyce triplo longiore, limbo profunde bilabiato, filamento sterile glabro. In California (Coulter!). Specimina vix 4-pollicaria. Foliorum forma et ramulorum pars inferiora Veronicam officinalem referunt. Folia caulina vix semipollicaria, floralia ad bracteas minutas reducta. Calycis segmenta lanceolata, 3 lin. longa. Corollae tubus 9 lin. labia 3 lin. longa. Antherae glabra. (v. in herb. Hook.)"—DC. Prodr. **10:** 593. 1846.

CASTILLEJA CAMPORUM (Greenm.) Howell, Fl. N. W. Am. 532. 1901.

Castilleia pallida var. *camporum* Greenm. Bot. Gaz. **25:** 266. Ap. 1898.

Castilleja lutea Heller, Bull. Torr. Club, **25:** 268. My. 1898.

Although Mr. Howell has kept both *C. camporum* and *C. lutea* as distinct species in his Flora, they are undoubtedly one and the same, for I have been able to satisfy myself upon this point through the kindness of Dr. B. L. Robinson, of the Gray Herbarium, who submitted to me for examination the type of *C. camporum.*

Orthocarpus tenuis

From very small to about 2dm. high, strict, not branching; the yellowish or purplish stem pubescent and hirsute but not

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viscid: lowest leaves linear-lanceolate, long-acuminate, 3-4cm. long, 2mm. wide, those of the middle part three-parted, broader (nearly 1cm.) with cuneate base, the middle lobe a third longer than the lateral ones: bracts of the rather lax spike broadly cuneiform, 5-cleft into long-attenuate divisions, commonly a little shorter than the flowers, all pubescent and ciliate as are the leaves: flowers slender, bright yellow, 1.5cm. long, sacs 3mm. wide, pubescent, especially on the tube and galea, which latter is whitish, sharp-pointed, and slightly curved.

No. 6907, collected in low grassy places at the lower end of Donner Lake, Nevada county, California, July 10, 1903. Perhaps a near relative of *O. hispidus* Benth.

Campanula Californica (Kellogg)

Wahlenbergia Californica Kellogg, Proc. Cal. Acad. **2**: 158. 1863.

Campanula linnaeifolia A. Gray, Proc. Am. Acad. **7**: 366. 1868.

These two names plainly belong to the same plant, and as Dr. Kellogg's name has priority, it should be used.

Anaphalis occidentalis (Greene)

Anaphalis margaritacea var. *occidentalis* Greene, Fl. Fran. 399. 1897.

This large flowered plant of the middle and northern Californian seaboard is certainly distinct from the eastern species. It differs in having a thick, coriaceous leaf, with a broad, auriculate-clasping base, the upper side glabrous, deep green and glossy, while the flower heads are nearly twice the size of those of *A. margaritacea*, which has a thinner linear leaf, white woolly on both sides. The plant of the Sierras is also distinct, being *A. subalpina* (A. Gray) Rydb.

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MUHLENBERGIA

A. A. HELLER, Editor

LOS GATOS, CALIFORNIA, FEBRUARY 22, 1904

[All unsigned articles in this journal are by the Editor, and the types of all new species described by him are deposited in his private herbarium, unless otherwise stated.]

WESTERN SPECIES, NEW AND OLD.—II.

Sabina occidentalis (Hook.)

Juniperus occidentalis Hook. Fl. Bor. Am. **2**: 166. 1840.

No. 7166, collected above Donner Lake, near Donner Pass, Nevada county, California, August 14, 1903. It occurs as scattered individuals or sometimes in clumps of several trees. Although the trunks are thick, it is usually a low, gnarled tree, showing the effect of the winter storms. True *Juniperus* is represented in this country by *J. communis* and several allied species, distinguished by their subulate leaves in whorls of three, jointed at the base, glandless on the back, and neither appressed nor imbricated.

Abama occidentalis (A. Gray)

Narthecium ossifragum var. *occidentalis* A. Gray, Proc. Am. Acad. **7**: 391. 1868.

Narthecium Californicum Baker, Journ. Linn. Soc. **15**: 351. 1876.

Abama Californica Heller, Cat. Ed. 1, 3. 1898.

A species originally collected in Mendocina county, California, but also found in the Sierras in Sierra county by Lemmon.

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Sisyrinchium maritimum

Rootstock short, ascending or somewhat horizontal: plants tufted, about 1dm. high: foliage bright green; larger leaves slightly surpassing the scapes, blades 3-5mm. wide, firm, rather prominently about 6-nerved, margins slightly hyaline: scapes 1dm. high or less, bearing two or three branches, often 3mm. wide, broadly margined: spathe nearly twice the length of the scapes; bracts unequal, the outer one 3cm. long, the inner one about 2cm.: flowers one to several, the pedicels filiform, flexuous, brownish, exserted about 1.5cm. from the bracts: perianth large, almost 2cm. across, deep violet, outer divisions obovate with cuneate base, about 1cm. broad, 5-veined, the inner somewhat narrower, broadly oblong or spatulate, 3-veined, all prominently cyathiform-cuspidate and usually several notched; the tube at the curve of the throat of a deeper violet than the outer part of the perianth, its base yellow, this yellow portion running up into short, close fimbriate divisions, following the veins: staminal column about 7mm. high: immature somewhat pyriform capsules 3mm. high.

No. 6538, collected in wet clay intermixed with sand on the beach between Point Pinos and Moss Beach near Pacific Grove, Monterey county, California, April 8, 1903. It is a species remarkable for its small stature and large handsome flowers.

EBUROPHYTON

Saprophyte: perennial herb from branched creeping rootstocks, whole plant white, leafless, merely scarious-bracted: flowers white, few to many in a short raceme, almost sessile, readily falling, segments ovate-lanceolate, the two lower ones larger than the three upper, standing almost horizontally, their tips slightly recurved, strongly keeled and somewhat concave on the outside; the three upper segments spreading, erect, less strongly keeled concave within; lip free, shorter than the perianth segments, the saccate base with broad wing-like margins, jointed at the middle, with a callosity on either side of the joint, this outer

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jointed part curved outward and downward, concave-grooved, comparable in shape to the half of a shoe-eyelet, the tip slightly curled: column twice longer than the anther. According to MacDougal, Bull. Torr. Club, **26**: 512, this is not a true saprophyte, but may be called a symbiotic saprophyte.

Eburophyton Austinae (A. Gray)

Chloraea Austinae A. Gray, Proc. Am. Acad. **12**: 83. 1876.

Cephalanthera Oregana Reichenb. f. Linnaea, **41**: 53. 1877.

Cephalanthera Austinae Heller, Cat. Ed. 2, 4. 1900.

The description given above was drawn chiefly from fresh material, my No. 5936, collected in rich woods in moist, deeply shaded places in Lake county, California, midway between Potter Valley and Hullville, on the slope of Mt. Sanhedrin. The original, as described by Gray, was collected on "banks of a wooded ravine in the Sierra Nevada, California, near Quincy, in Plumas Co., Mrs. R. M. Austin."

Outwardly at least, our plant bears more resemblance to the South American *Chloraea* than it does to *Cephalanthera*, which is confined to Europe and northern Asia, and so far as I know is composed of ordinary terrestrial herbs with green chlorophyll, ample leaves, and flowers in which red predominates. Indeed, if the present plant is to be referred to any established genus, it might as well be called an *Epipactis*, for it has various characters in common with *Epipactis giganteus*, which grows in the same region. In the "Botany of Califoraia," **2**: 137, it is said that "in its peculiar leafless and parasitic habit our species resembles the American *Bletia aphylla*, which in the same way differs from all its congeners." Rafinesque created the genus *Hexalectris* for *Bletia aphylla*, and as *Hexalectris* it is known in the standard works which cover the region where it grows. In my opinion a plant of such peculiar habit should be separated on that point alone, even if floral and fruit characters are similar to some other plants.

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Juglans major (Torr.)

Juglans rupestris var. *major* Torr. Sitgreave's Report, 171. *pl. 16.* 1854.

Juglans Californica Wats. Proc. Am. Acad. **10:** 349. 1875.

The type of *J. major* came from western New Mexico, collected by Dr. Woodhouse. Under *J. Californica* Watson says: "A large shrub or tree, in the vicinity of San Francisco growing 40-60 feet high and 2-4 feet in diameter, and ranging southward to Santa Barbara, Southern Arizona and Sonora."

Cerastium maximum (Hollick & Britton)

Cerastium arvense var. *maximum* Hollick & Britton, Bull. Torr. Club, **14:** 47. *pl. 64. f. 2.* 1887.

No. 5269, collected on hillsides at Bodega Bay, Sonoma county, California, April 11, 1902, apparently belongs to this species. The type, taking the plant figured as the type, was collected by Mrs. Curran near San Francisco. It is certainly distinct from the eastern *C. arvense.*

Sagina ciliata (Greene)

Alsinella ciliata Greene, Fl. Fran. 126. 1891.

Originally from Ione, Amador county, California, and described as "a plant of compact habit, very different from the other species."

Ranunculus tenuipes

Stems several, slender, erect from a cluster of fleshy fibrous roots, branched above, the branches ascending, pubescent with spreading hairs, which on the branches become sparser and somewhat appressed: leaves few, mostly basal, these orbicular in outline, cordate at base, the sinuses acute, the largest 5cm. in diameter, deeply 3-parted into obovate-cuneate lobes, the lateral lobes again parted into two divisions which are acutely cut-toothed into several acute lobes; the terminal division deeply three lobed, these again cut as are the lateral segments, pubescent on both sides with appressed hairs which are plentiful on

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the veins; slender petioles about 1dm. long, pubescent with spreading hairs; stem leaves one below each branch, one or two of the lower much like the basal ones, the upper ones merely cut into several linear lobes, almost sessile: flowers scattered, on long filiform bracted peduncles of 1dm. or less: sepals reflexed, not over half the length of the petals: petals oblong, blunt, 7-8mm. long, 2-3mm. wide, glossy, prominently veined: heads globose, achenes flattened, about 2mm. across, glabrous, tipped by the uncinate beak, which is more than half the length of the body.

No. 3935, collected June 13, 1898, at Montesano, Chehalis county, Washington, altitude about 200 feet. This species, which grows on dry gravelly slopes, was distributed in 1898 under the above name. It is a relative of *R. occidentalis*, and a comparison with the type of that species, preserved in the herbarium of Columbia University, seems to warrant the segregation. True *R. occidentalis*, a very hairy plant, collected by Nuttal near the mouth of the Columbia river, is rare in collections; the plant described under that name by Howell in his Flora of Northwest America seems to be *R. tenuipes*.

Erysimum ammophilum

Biennial? stems solitary, stout, often 6dm. high, large plants branched in the upper half, purplish, angled, pubescent with short, straight, closely appressed hairs: leaves at the base of the stem densely crowded, linear or linear-lanceolate, 5-7cm. long, somewhat runcinate toothed, the petiole nearly as long as the blade, pubescent like the stem with appressed hairs; stem leaves scattered, narrowly lanceolate, gradually reduced, the upper sessile or nearly so, with a forked or stellate pubescence: flowers bright golden yellow, large, 2cm. long and nearly as wide when expanded; calyx rather thick, urn-shaped, pale, pubescent with appressed hairs, sepals oblong, acutish, the upper half hyaline margined, the inner ones saccate at base, broader and slightly shorter than the outer ones: wing of the petal broadly obovate, 1cm. long and almost as wide, claw about 2mm. wide above,

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half as wide below: filaments flattish: pods stout, spreading almost at right angles or somewhat ascending, 4-6cm. long, nearly 3mm. wide, the stout very short style point only 1mm. long; pedicels 1cm. long, half the thickness of the pods.

No. 6650, collected on the sand hills beyond Seaside, near Del Monte, Monterey county, California, May 1, 1903. In size and color of the flowers it is like *E. grandiflorum*, which is found at Point Pinos, only a short distance beyond, but in other respects it is very different. In case the name *Cheiranthus* is the proper one for the genus, this species may be known as *Cheiranthus ammophilus.*

Erysimum Nevadense

Apparently perennial: stems 3-7dm. high, simple, or the larger plants a little branched, bright green or purplish, more or less pubescent with appressed hairs: basal leaves numerous, oblong-spatulate, 4-5cm. long, including the slender petiole of 2-2.5cm., about 8mm. wide, inconspicuously runcinate-toothed, sparingly appressed pubescent on both sides, the apex rounded, shortly apiculate; stem leaves scattered, gradually becoming smaller and sessile or nearly so, linear-lanceolate, acute, entire: flowers bright yellow: calyx 1cm. long, appressed pubescent, the oblong lobes barely acutish: petals about 17mm. long, the ovate blade 6mm. long; 5mm. wide: pods rather slender, ascending, about 1dm. long, 2mm. wide, beaked by the evident (5-7mm.) style: seeds 2mm. long, green, the one side edged with a thick yellowish rim.

No. 6956, collected July 17, 1903, near the base of the ridge skirting the south side of Donner Lake, Nevada county, California, altitude 6000 feet. It grew on a wooded northerly slope among rocks. The pedicels, which are less than half the thickness of the pods, are 1cm. or more in length, ascend at an angle of about forty-five degrees, and the pod itself is commonly erect. It is one of the aggregates of *E. asperum*, and perhaps may have to be known as *Cheiranthus Nevadensis.*

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Therofon intermedium (Piper)

Boykinia major intermedia Piper, Erythea, 7: 172. 1899.

The type was collected by F. H. Lamb, No. 1267, at New London, Chehalis county, Washington, June 10, 1897. Professor Piper compares this rather with *T. elatum* (*Boykinia occidentalis*) and suggests a hybrid origin. He does not state whether the two suspected parents grow in the vicinity where *T. intermedium* was collected. In his Flora of Northwest America Mr. Howell does not record *T. majus* from Washington, but only from Oregon and California.

Lutkea cinerascens (Piper)

Spiraea cinerascens Piper, Erythea, 7: 171. 1899.

Collected by A. D. E. Elmer on basalt bluffs of the Columbia river, twelve miles south of Chelan, Washington.

Rosa pinetorum

Stems slender, clustered, erect, sparingly branched, 6-8dm. high, usually densely prickly below, the prickles very slender, rather weak, straight, about 5mm. long, with scarcely dilated base, or with occasional stouter ones 1cm. long with enlarged base, these large ones principally upon young shoots: leaves glandless, somewhat coriaceous, either elliptical-ovate or almost orbicular, the larger nearly 3cm. long, over 2cm. wide, sharply serrate except at the rounded or truncate base, the lower serratures usually gland tipped; or the smaller leaves with somewhat cuneate base, deep green and glabrous above, beneath paler and somewhat pubescent, especially on the veins, of which the midvein only is prominent but not pale; rachis prickly and somewhat glandular, the glands stalked; stipules entire, acute, usually glandular on the margin: flowers commonly solitary, sometimes two or three in a corymb: calyx lobes about 2cm. long, lanceolate, sometimes broadly so, the margins densely ciliate with white woolly hairs, either glandular or smooth: the slender tip commonly enlarged and foliaceous: corollas deep rose-purple, about 4cm. across, the petals somewhat notched: ovary globose, smooth and glabrous.

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No. 6817, collected in sandy pine woods about Pacific Grove, Monterey county, California, June 3, 1903. This species is perhaps more related to the southern *R. gratissima* Greene, than it is to *R. Californica.*

Here is also referred a form collected in damp grassy places in the woods back of Pacific Grove, which has an irregularly crenate-serrate, more uniformly rounded leaf with prominent pale veins, the calyx lobes with larger foliaceous tips, which are somewhat serrate. It is lower in stature and more branched. Although quite a marked form, it is for the present included under *R. pinetorum.*

Lathyrus ecirrhosus

Perennial from slender running rootstocks: stems ascending, 3-4dm. high, branched, glabrous and somewhat glaucous, striate, sharply angled above, leafy throughout: petioles 1-2cm. long; leaflets 10-14, elliptical, 1.5-2.5cm. long, 5-12mm. wide, the apex rounded, aristate, bright green above, pale beneath, prominently veined, glabrous; stipules large and foliaceous, entire or obscurely sinuate-toothed, the larger lower ones broadly ovate, 2cm. long and nearly as wide, cordate clasping at base; the upper somewhat smaller, more pointed: tendrils none, represented by a short filiform prolongation of the leaf rachis: peduncles shorter than the leaves, erect, few flowered: flowers wanting, but probable bluish-purple: calyx 8mm. long, the two short upper teeth deltoid, with a rounded sinus between; the three lower ones longer and narrower, the longer middle one subulate, entire, obscurely ciliate: pods 3cm. long, few (2-6) seeded: seeds dark brown, smooth.

No. 5944, collected on grassy southerly slopes of Mt. Sanhedrin, Lake county, California, July 22, 1902. Its nearest relative is the recently described *L. Brownii* Eastwood, from Mt. Shasta, but that has fewer and narrower leaflets, different stipules and spreading or declined peduncles. About ten days previous to the collection of our type number, a blue-purple *Lathy-*

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rus of low growth was observed in the vicinity, but no specimens collected, and it is pretty certainly the plant here described.

Trifolium trichocalyx

Annual, prostrate or decumbent, much branched: branches either very short, 3-4cm, or 2-3dm. when growing in moist places, slender, often purplish, glabrous below, more or less pubescent above with spreading white hairs: stipules broad, foliaceous, about 5mm. across on large plants, setaceously laciniate: leaflets obovate-cuneate, maximum size about 1cm. long, 7mm. wide, truncate and usually retuse, spinulose dentate, slightly ciliate, otherwise glabrous: prominently veined: heads on slender peduncles of 1-3cm., 1-4 flowered on small plants, hemispherical and with numerous flowers on large plants: involucre small, spreading, rather deeply cut into about fifteen lance-acuminate divisions: calyx oblong or somewhat campanulate, about 7mm. long, 10-striate, the lance-acuminate lobes longer than the tube, densely pubescent with tangled or straight white hairs: corollas pale purple, not equalling the calyx lobes.

No. 6721, collected May 13, 1903, in sandy pine woods about Pacific Grove, Montersy county, California. It is an inconspicuous plant owing to its small size, depressed habit, and small, few-flowered heads as it occurs in its usual habitat along grass-grown roads and trails in the woods, but occasionally it is found in moist places, when the branches eventually become several decimeters in length. These large plants usually have short, few and small flowered branches at the base. It is related to *T. variegatum* in a general way, but very distinct from it and the other species of that group on accoant of the densely villous calyx.

Tithymalus crenulatus (Engelm.)

Euphorbia crenulata Engelm. Bot. Mex. Bound. 192. 1859.

Euphorbia leptocera Engelm.; Boiss. DC. Prodr. **15**: Part 2, 143. 1862.

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Our No. 6486, collected at the type locality in woods about Pacific Grove, near Monterey, California, April, 1903. The original was collected by Hartweg "in sylvis prope Monterey," No. 1950 (57). Specimens collected at the same place by Parry are also cited under the original description.

Tithymalus Franciscanus (Norton)

Euphorbia crenulata Franciscana Norton, Rep. Mo. Bot. Gard. **11:** (reprint 38). 1899.

No. 6625, collected in sandy ground near the U. S. Marine Hospital, San Francisco, April 25, 1903, is from type locality. Specimens were distributed as *Euphorbia leptocera*, although at the time it was considered a remarkable form as compared with the typical plant from woods about Monterey.

Tithymalus dictyospermus (F. & M.)

Euphorbia dictyosperma F. & M. Ind. Sem. Petrop. 37. 1835.

In general appearance much like *T. crenulatus*, but easily distinguished by the roughened seeds. It is less common, and only a few plants were collected during 1902 and 1903. The type was grown from seed collected at Bodega Bay, Sonoma county, California.

Gilia violacea

Annual, much branched and spreading from the base, 1.5dm. high and as broad, pubescent with short, somewhat tangled hairs, glandular: leaves 2cm. long or less, the lower on margined petioles, the upper sessile, commonly 3-lobed, the lobes linear, acute, narrow, 1mm. or slightly more, the terminal one twice the length of the lateral ones, pubescent as the stems, and more or less glandular: flowers scattered, on slender pedicels of 1cm. or less, deep violet, tubular-funnelform, 7mm. long, barely 2mm. wide across the top, the tube considerably exserted beyond the calyx, which is less than 3mm. long in the flowering stage.

No. 6873, collected in sand and gravel at the lower end of Donner Lake, Nevada county, California, July 8, 1903. It is a

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relative of *G. inconspicua* Dougl., and may be in some collections under that name.

Langloisia punctata (Coville)

Gilia setosissima punctata Coville, Proc. Biol. Soc. Wash. **7**: 72. 1892.

Navarretia setosissima punctata Coville, Cont. U. S. Nat. Herb. **4**: 154. *pl. 14.* 1893.

The type was collected by Mr. Coville in Surprise Canon, Panamint mountains, Inyo county, California, April 21, 1891, No. 716 of the Death Valley Expedition.

POLEMONIELLA

Annual herb with weak spreading or ascending branches, leafy and glandular throughout: leaves pinnate, lower leaflets petiolate, the upper sessile with decurrent base: flowers scattered: calyx prominently veined, open campanulate, 5-cleft to or beyond the middle, the segments lanceolate, entire, callous tipped: corollas white, nearly rotate, small, not equalling the calyx, the petals broadly obovate, shortly cuspidate, delicately veined: filaments almost naked at base: capsule 8-10-seeded.

Polemoniella micrantha (Benth.)

Polemonium micranthum Benth. DC. Prod. **9**: 318.

The writer has been acquainted with typical *Polemonium* for a number of years, but when he first collected the plant under discussion, had not the remotest idea that it could be referred to that genus. To my mind a plant which cannot be generically placed in the field by one who has a considerable acquaintance with genera and species from all parts of the country, cannot belong to a genus which he has hitherto easily recognized. *Polemoniella* differs from *Polemonium* in that it is annual, has scattered solitary flowers instead of cymose panicles or racemes, the flowers are small and inconspicuous, nearly rotate in shape, included within the calyx, as opposed to showy, mostly funnel-form corollas several times longer than the calyx, and

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filaments nearly naked at the base instead of dilated and pilose appendaged. Our 2953, collected near Lewiston, Idaho, April 24, 1896, shows good examples of this plant. It grew in rich soil along the Clearwater river, but not in places especially "moist" or "springy."

Phacelia racemosa (Kellogg)

Nama racemosa Kellogg, Proc. Cal. Acad. **5:** 51. 1873.

Phacelia namatoides A. Gray, Proc. Am. Acad. **10:** 317. 1875.

No. 6981, collected near Summit Station, in Placer county, California, July 20, 1903, altitude 7000 feet. The type was collected by Kellogg and Brannan at Cisco, July 6, 1870. In transferring this plant to the genus *Phacelia*, Gray changed the specific name, apparently without reason.

Heliotropium oculatum

Herbaceous perennial, glabrous and glaucous throughout: stems ascending, diffusely spreading, about 3dm. high, leafy throughout: leaves on rather short broad petioles, the larger ones on the middle part of the stem oblanceolate or spatulate, about 4cm. long, 1.5cm. wide, rounded and obtuse, often with fascicles of several small ones in the axes; smaller lower and upper leaves commonly oblong, acute or acutish: spikes commonly in pairs, one of them sometimes two-forked, eventually long and slender (5cm.) densely flowered: corollas about 4mm. across, the short-oblong lobes blunt and rounded, throat with a purple eye.

No. 5813, collected July 8, 1902, in sand along the Russian river at Healdsburg, Sonoma county, California. It was also noticed on moist banks along the Eel river near Hullville, Lake county. Strange as it may seem, this plant has long passed as *H. Curassavicum*, a tropical and semi-tropical plant whose habitat is sea beaches. It is a plant with long slender branches, narrow leaves, small white flowers, and bears little resemblance to our inland species.

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Agastache Cusickii (Greenm.)

Lophanthus Cusickii Greenm. Erythea, **7**: 119. 1899.

The type was collected by Cusick in southeastern Oregon on Stein's mountain, July 4, 1898, No. 2001.

Ramona pachystachya (A. Gray)

Audibertia incana var. *pachystachya* A. Gray, Syn. Fl. **2**: Part 1, Ed. 2, 461. 1886.

Audibertia pachystachya Parish, Erythea, **6**: 91. 1898.

A species originally collected by Mr. Parish in Bear Valley, San Bernardino mountains, California.

Ramona Vaseyi (Porter)

Audibertia Vaseyi Porter, Bot. Gaz. **6**: 207. 1881.

Also a species of southern California, the type from Mountain Springs, San Diego county, collected by G. R. Vasey in 1880.

Orthocarpus bicolor

Maximum height about 3dm., the larger plants usually with several ascending branches, the middle one or main stem longest, pubescent throughout, especially above, where the hairs are spreading: lowest leaves apparently entire, linear-lanceolate, acuminate, 3-4cm long, those of the upper three-fourths of the stem oblong in outline, the largest 1cm wide at the base, cut into usually five linear-lanceolate acuminate lobes, the middle one always longest, the upper ones merging into the floral bracts, all pubescent with rather stiff spreading hairs, veins prominent: spikes rather dense; bracts cuneate-obovate, cleft like the upper leaves, shorter than the corollas: calyx 1cm. long, hirsute pubescent, the lance-acuminate lobes 4-5mm. long: corollas white, turning pink with age, 2cm. long, pubescent with short spreading hairs, especially the slender tube of 1.5cm., lip nearly 1cm. across, 3-4mm. deep, teeth short and inconspicuous, the galea subulate.

No. 5519, collected May 10, 1902, near Clear Creek Post Office, Butte county, California, growing in a grassy meadow.

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It is a relative of *O. lithospermoides*, and may be the plant mentioned in Pl. Hartw. 329, under 1899 (319): 'Flores ex Hartw. primum albidi, demum pallide rosei.—In Valle Sacramento,"

Eunanus clivicola (Greenm.)

Mimulus (*Eunanus*) *clivicola* Greenm. Erythea, 7: 119. 1899.

The type is No. 586, collected by D. T. MacDougal and the writer in northern Idaho in 1892, while collecting under the auspices of the U. S. Departmedt of Agriculture. The specimens were obtained on a grassy slope in the forest on the trail leading from the St. Joseph's river at Reid's landing, to Weissner's Peak.

Valeriana Californica

Stems about 3dm. high, somewhat puberulent as well as glaucous: leaves of sterile shoots 1dm. long, including the margined petiole of 4cm., usually 5 but occasionally 7 lobed, these lanceolate, the lateral ones with decurrent base, the lowest pair smaller, about 1.5cm. long, 5mm. wide, the pair above one-fourth longer and proportionately wider, the terminal one much larger, about 5cm. long, and nearly 2cm. wide; stem leaves few, usually three pairs, smaller, on much shorter petioles, the terminal lobe sometimes a little serrate, and sometimes rounded and obtuse, the uppermost pair of leaves nearly sessile, or sometimes reduced to a pair of linear bracts, all moderately glaucons, pubescent with short hairs, or puberulent, ciliolate, the petioles with a broad base: inflorescence thyrsoid paniculate, when in fruit the lowest pair of branches separated from the others by an internode of about 1dm., its peduncles slender, about 5cm. long; corollas creamy white, small, 3mm. long, the oblong lobes rounded and obtuse: stamens and style exserted, about 5mm. long: fruit either woolly pubescent or smooth.

No. 7156, collected on the high ridge south of Donner Pass in Placer county, California, altitude 8300 feet. It is abundant at this place, growing in gravel on a steep northerly slope, and

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occurs in favorable situations at other places in the vicinity, as near the south shore of Donner Lake at 6000 feet. It has heretofore been referred to the eastern *V. septentrionalis* Rydb. (*V. sylvatica* Banks), which occurs with certainty only as far west as the eastern borders of Idaho.

Achillea arenicola

Stem stout, 4dm. high, 5mm. in diameter near the base, simple, clothed throughout with a close dense covering of persistent woolly hairs, leafy throughout: basal leaves about 8cm. long, those of the middle and upper part of the stem crowded, gradually reduced in size, the uppermost about 2cm. long, all linear in outline, the largest about 1cm. wide, pinnatifid with rather fine, crowded aristate-pointed segments, especially those of the middle and upper parts, where the divisions are concealed by the thick wool: corymb very compound, rounded rather than flat topped: heads 5 or 6mm. high, woolly as the other parts of the plant: involucral bracts with prominent yellow keel which is bordered with green, margins thin, brown, often somewhat lacerate: rays small, less than 3mm. across: immature achenes linear, slightly margined.

No. 5608, collected May 27, 1902, on sand hills at the upper end of Bodega Bay, Sonoma county. Probably nearest to *A. Californica* Pollard, but differing in several particulars, and remarkable for its excessive woolliness which seems to be permanent, although a little less dense at the base than on the upper parts of the plant.

Carduus Vaseyi (A. Gray)

Cnicus Breweri var. *Vaseyi* A. Gray, Syn. Fl. **1**: Part 2, 404. 1878.

Carduus undulatus var. *Nevadensis* Greene, Proc. Acad. Phila. 1892: 361. 1893.

Carduus inamoenus Greene, Fl. Fran. 479. 1897.

The type of *C. Vaseyi* was very imperfectly described as "perhaps a distinct species, only arachnoid-tomentose and green-

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ish, even glabrate in age.—California in Plumas and Sierra Co., *Lemmon*, *Mrs. Ames.*" Under *C. inamoenus* Greene says: "It forms a part of the *Cnicus Breweri Vaseyi* of Gray, but is not the plant of Vasey's collecting." Whether Gray really meant to apply the name to the plant collected by Vasey, we do not know, but the text plainly points to the Sierran plant which is placed first. Then are mentioned two other forms, the second "growing in dry soil exposed to the sun, Tamalpais, *G. R. Vasey.*" The third form was "in salt marshes, Suisun Bay, *Greene*," later described by Professor Greene as *C. hydrophilus*.

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Volume 1. No. 5

MUHLENBERGIA

A. A. HELLER, Editor

LOS GATOS, CALIFORNIA, ~~AUGUST 30~~ Sept. 26, 1904

[All unsigned articles in this journal are by the Editor, and the types of all new species described by him are deposited in his private herbarium, unless otherwise stated.]

THE GENUS RIBES IN CALIFORNIA

For a number of years the writer has been interested in this genus, and at one time contemplated monographing it. Lack of facilities at first delayed the work, and later when the facilities were at hand, there was no time available for the purpose, although some little preliminary work was accomplished. The opportunity for studying a number of species in the field during this and the past two seasons has again renewed the interest.

The genus is richly represented in California, at least half of the known species in this country occurring within the boundaries of the State, and all the different sections, sub-gener, or genera, as one may choose to call them, are represented. Since the publication of the "Botany of California," no complete account of the species occurring within the State has been given, but many new species have been published, and the object of this paper is to present in one place an account of the known forms, with a key which locates each individual species. The making of this key has been somewhat difficult, owing to in-

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complete descriptions. The flower affords excellent characters upon which to base a key, but the flower is poorly described in some species, and of several of these good material has not been available.

In Proc. Cal. Acad. III. Bot. **2**: 241-254, under the caption "Some new Species of Pacific Coast Ribes," Miss Eastwood has published one of the most valuable contributions to our knowledge of the genus. Her descriptions are uniform, so that any particular organ in one species can be readily compared with the same organ in another species. She also uses the metric system, which is certainly to be preferred when small, as well as accurate measurements are concerned. Ths term "line" as applied to measurements is quite worthless. Theoretically it is one-twelfth of an inch, but in practice it seems to be without any fixed limit, and is on a par with "large" or "small," when the latter terms are unaccompanied by definite measurements.

Miss Eastwood lists 55 species as occuring on the Pacific Coast, including Lower California, but three of these should be stricken out. *R. gracile* is confined to the Atlantic side, to the Appalachian system only, the plant which has passed under that name on the Pacific side being *R. niveum*. *R. montigenum* is said to be identical with *R. lentum;* and *R. leptanthum*, a species of the southern Rocky mountain region, hardly reaches California. Two other species are listed by her as possibly occurring in this region—*R. Roezli* and *R. Spaethianum*. I too am not acquainted with the place of origin of the former, but *R. Spaethiauum* was described from Colorado material, and is one of the *R. cereum* forms.

Of the nine Pacific coast species not occurring in California, five are currants with rotate or saucer-shaped calyx, while four belong to the smooth fruited section of gooseberries. The following are the nine:

Currants	*Gooseberries*
prostratum	niveum
Hudsonianum	cognatum

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Currants	*Gooseberries*
migratorium	Watsonianum
ciliosum	binominatum
erythrocarpum	

The following are common to California and adjacent parts:

aureum	Lobbii
bracteosum	Marshallii
cereum	cruentum
viscosissimum	lacustre
sanguineum	lentum
viburnifolium	saxosum
laxiflorum	velutinum

The distribution of the species in California is as follows:

COAST REGION	SIERRA NEVADA
Currants	*Currants*
bracteosum	viscosissimum
sanguineum	Nevadense
Scuphami	variegatum
glutinosum	adscendens
malvaceum	glaucescens
viridifolium	
indecorum	
Hittellianum	
viburnifolium	
laxiflorum	
Gooseberries	*Gooseberries*
Menziesii	Mariposanum
hystrix	amictum
Californicum	Wilsonianum
occidentale	aridum
oligacanthum	saxosum
Victoris	lasianthum
subvestitum	Congdoni
sericeum	velutinum

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Gooseberries
Lobbii
Marshallii
cruentum
hesperium
amarum
lacustre
divaricatum
quercetorum
speciosum

Only two species, *cereum* and *lentum*, seem to be common to both the coast region and the Sierra Nevada, and so far as I know are found in the coast region only in the high mountains of the eastern part of Ventura county, where the two mountain systems are more or less connected. *R. cereum* should be expected to occur in the high mountains of the north coast region, especially in the innermost ranges.

Since the original description of a species should be the most important one, I am using it under every species in this paper, supplementing it by such observations as seem helpful in the light of later and more extended knowledge.

KEY TO THE SPECIES

Stems without thorns or prickles: flowers in racemes—(Currants)
- Leaves convolute in the bud
  - Flowers yellow
    - Calyx tube elongated: berries smooth, yellow — 1. R. aureum
- Leaves plicate in the bud
  - Flowers greenish-white or creamy
    - Calyx saucer-shaped, lobes oblong: petals minute, roundish: fruit black, globose, resinous dotted — 2. R. bracteosum
    - Calyx saucer-shaped, lobes broad spatulate: petals narrowly spatulate: fruit globose, hispid — 3. R. laxiflorum
    - Calyx tube slender, cylindrical, the short rounded lobes recurved: petals minute, somewhat kidney-shaped: fruit scarlet, globose — 4. R. cereum
    - Calyx tube campanulate, large, the lobes lanceolate, spreading: petals ovate, white: fruit turbinate, black, glandular hirsute — 5. R. viscosissimum

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Flowers red, or red and white
Calyx tube more or less cylindrical
Shorter than the oblong lobes: petals obovate: fruit turbinate, blackish, pubescent, the skin tough and leathery — 6. R. sanguineum
Shorter than the linear-oblong lobes: petals oblanceolate, cuneate: fruit somewhat pubescent and stipitate glandular — 7. R. Scuphami
About the length of the lobes: petals spatulate-oblong: fruit large, globose, blue with a dense bloom, glandular hispid — 8. R. glutinosum
Slightly longer than the broad rounded lobes: petals roundish or fan-shaped: fruit oval, purplish, glaucous — 9. R. malvaceum
Over twice the length of the broadly ovate lobes: petals rounded, obscurely cordate at base: fruit purple, pubescent and glandular — 10. R. viridifolium
More than twice as long as the broad, rounded lobes: petals orbicular, crenulate; fruit tomentose and somewhat glandular — 11. R. indecorum
Short, about as long as the spreading lobes: leaves short pubescent on both sides: bark of old branches flaky, deciduous: fruit black, small, globose, densely glaucous — 12. R. Nevadensis
About half as long as the ovate lobes: petals oblong-ovate, about 2mm. long: style deeply bifid: ovary glandular hispid — 13. R. variegatum
Half as long as the ovate, obtuse lobes: petals orbicular, narrowed to a short broad claw: fruit veiny, sparingly glandular — 14. R. adscendens
One-fourth the length of the oblong, obtuse lobes; petals narrowly oblong: fruit stipitate-glandular — 15. R. Hittellianum
Very short, the lobes spreading, oblanceolate, 4mm. long: petals spatulate, denticulate near the apex: ovary with scattered stipitate glands — 16. R. glaucescens
Turbinate at base, oblong above, lobes oval, rotately spreading: petals greenish, inserted with the filaments on a broad, flat disc — 17. R. viburnifolium

Stems thorny under the fascicles: flowers few, usually 1-4—(Gooseberries)
Flowers 5-merous: peduncles racemously several flowered
Berries prickly or glandular
Calyx saucer-shaped
Stamens equalling the petals: fruit black — 18. R. lacustre
Stamens shorter than the petals: fruit red — 19. R. lentum

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Flowers 5-merous, peduncles 1-4-flowered
Berries prickly or glandular
Calyx cylindrical or campanulate, the lobes reflexed
Filaments shorter than the petals
Subulate, anthers white, linear-oblong, mucronate — 20. R. Menziesii
Broad, dilated at base, 3mm. long, anthers 3mm. long, sagittate at base, bluntly mucronate: style exserted, 2-parted — 21. R. hystrix
Filaments scarcely exceeding the petals
Subulate, anthers under 2mm., ovate, acute, mucro blunt or truncate — 31. R. amictum
Subulate, anthers connivent, with prominent cusp bent outward: petals white with red veins, cuneate quadrate — 32. R. Wilsonianum
Anthers purplish, lanceolate, rounded at base, mucro blunt: petals white or pink, the truncate apex laciniate-dentate — 33. R. cruentum
———: calyx hoary tomentulose, dark red within: fruit small, with short and stout slender conical spines — 34. R. aridum
Anthers purplish, ovate-oblong, sagittate, mucronate: petals suborbicular, strongly involute, pinkish, red streaked near base — 36. R. amarum
Filaments half longer than the petals
Anthers greenish, ovate-oblong, mucronate — 35. R. hesperium
Anthers pale yellow, lanceolate, neither saggitate nor mucronate — 26. R. Mariposanum
Filaments twice the length of the petals
Stoutish, anthers ovate-oblong, base broad, not sagittate, apex obtusish, not mucronate: fruit oval, yellow, densely glandular prickly — 25. R. Victoris
Subulate, anthers pale yellow, lance-oblong, under 2mm., mucronate: style cleft almost to the middle — 23. R. occidentale
Subulate, dilated at base, anthers oblong-ovate, cordate at base, mucro recurved: style two-thirds divided, slightly exserted — 24. R. oligacanthum
Subulate, not dilated at base, anthers oblong, acutish, mucro obtuse: style cleft almost to the middle, exserted — 27. R. subvestitum
Filiform, anthers purple, oval, very obtuse, warty glandular on the back — 20. R. Lobbii
Slender, anthers under 2mm., oblong. obtuse at both ends — 30. R. Marshallii

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Filaments thrice the length of the petals
Stout, anthers reddish, ovate-oblong, mucronate: style entire — 22. R. Californicum
Filaments exserted beyond the style
Filiform, purple, over 2cm. long, anthers narrowly linear-oblong, obtuse, nearly 2mm. long: style cleft for 2mm. — 28. R. sericeum
Berries velvety pubescent and glandular
Calyx tube cylindrical
Calyx white or pinkish, about 4mm. long, woolly, the tube slightly shorter than the erect lobes — 37. R. velutinum
Berries smooth
Calyx tube cylindrical
Yellow, twice the length of the oblong-spatulate spreading lobes: stamens slightly exserted — 40. R. lasianthum
Yellow, equaled by the oblong lobes: stamens exserted: whole plant pubescent, branches prickly as well as thorny — 41. R. Congdoni
Yellow, equalled by the linear-oblong, reflexed lobes: stamens included: plant glabrous, without prickles — 42. R. quercetorum
Calyx tube campanulate
Greenish, shorter than the oblong-linear reflexed lobes, which are purple within: stamens long-exserted — 38. R. divaricatum
Greenish-white, equaled by the oblong lobes: stamens equaling or slightly exceeding the calyx — 30. R. saxosum
Flowers 4-merous
Berries prickly: leaves evergreen: flowers bright crimson: calyx cylindrical, the lobes erect: stamens long-exserted — 43. R. speciosum

1. **Ribes aureum** Pursh, Fl. Am. Sept. **1**: 164. 1814.
Ribes tenuiflorum Lindl. Trans. Hort. Soc. **7**: 242. 1830.

"R. inerme, glaberrimum; foliis trilobis: lobis divaricatis inciso-paucidentatis petiolo basi ciliato brevioribus, racemis laxis dense-multifloris, calycibus tubulatis pedicellis longioribus; tubo gracile: laciniis oblongis obtusis, petalis linearibus laciniis calycis duplo brevioribus, bracteis linearibus longitudine pedicellorum, baccis glabris.

"On the banks of the rivers Missouri and Columbia. *M. Lewis.* April. *v. s. in Herb. Lewis. v. v. in Hort.* Flowers

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in close racemes, beautiful golden yellow; berries red or brown, of an exquisitely fine taste, and considerably larger size than any of the garden currants. The shrub before flowering has the appearance of a species of *Crataegus*."

For many years our botanies mentioned but a single species of the yellow flowered currant, until in the Flora Franciscana, 196. 1891, Professor Greene reinstated Lindley's *R. tenuiflorum*, restricting to that name the plant of the Pacific coast. In the Proceedings of the Biological Society of Washington for 1903, pages 23-26, Mr. F. V. Coville discusses this group of plants, and shows that the name *tenuiflorum* is a synonym of *aureum*, the type of which was collected by Captain Meriwether Lewis April 16, 1806, "on the site of the present town of The Dalles, in Oregon." The eastern plant, of the Missouri region, is to be known as *R. longiflorum* Nutt. Our California plant, which may possibly prove to be distinct from *aureum* if it has an uniformly amber colored fruit, is found principally in the northern part of the State, in both the Coast Range and the Sierra.

2. **Ribes bracteosum** Dougl. in Hook. Fl. Bor. Am. **1**: 233. 1833.

Inerme, foliis longe petiolatis cordatis profunde 5-7 lobis, lobis acuminatis incisis duplicato-serratis supra hispidulis subtus resinoso-punctatis, racemis saepe terminalibus demum deflexis, pedicellis (quoad axin) erecte-patentibus pubescentibus bracteas spathulatas excedentibus, calyce rotato glabro, petalis minutis rotundatis, germinibus baccisque resinoso-punctatis.

Species insignis, 5-8 pedalis, ramis erectis, glabris, inermibus. Folia juniora nunc 3 lobata adulta et tunc longe petiolata 5- plerumque 6-loba, circumscriptione cordata, ampla, supra hirsutula, subtus glabra pallidiora, punctis resinosis adspersa, lobis acuminatis, subregulariter incisis duplicato-serratis. Racemi saepe in ramulis terminales primum erecti, fructiferi deflexi, valde elongati spithamaei. Rachis robusta glabriuscula. Pedicelli semi-unciam longi pubescentes, erecto-patentes, stricti, non raro oppositi, bractea spathuliformi nunc ad basin racemi foliosa lobata distincte petiolata, lobis acutissimis. Flores purpurascenti-flavi. Calyx rotatus; lobi obtusissimi petalis rotundatis 3-plo majores. Germen globosum, punctis majusculis resinosis adspersum. Bacca nigra magnitudine (vix matura) *R. rubri*, resinoso-punctata.

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North-West coast of America, at the confluence of the Columbia with the ocean. *Dr. Scouler*, *Douglas.* This is a very remarkable species, with leaves nearly as large as, and resembling those of *Acer Pseudo-platanus;* these as well as the fructified racemes have a very strong resemblance to the *R. macrobotrys* of Ruiz et Pav. Fl. Per. t. 232, but the flowers are widely different.

In California this species occurs only in the north coast region from Mendocino county north. It is found as far north as Alaska.

3. **Ribes laxiflorum** Pursh, Fl. Am. Sept. **2**: 732. 1814.
Ribes acerifolium Howell, Erythea, **3**: 34. 1895.
Ribes Howellii Greene, Erythea, **4**: 57. 1896.

R. inerme; foliis cordatis 5-lobis inciso-dentatis glabris, petiolis gracilibus, racemis laxis erectis longitudine foliorum, bracteis subulatis, pedicellis elongatis, calycibus campanulato-tubulatis, baccis globosis hispidis.

On the north-west coast. *Menzies. v. s. in Herb. Banks.* The flowers appear to be yellow, about the size of *R. floridum.*

Recorded from Humboldt Bay, California, collected by Chandler. There seems to be considerable confusion concerning this species, for Pursh characterizes the calyx as campanulate-tubular, while Torrey and Gray in Fl. N. A. describe it as rotate, the petals broadly flabelliform. Howell, in his Flora of Northwest America, also describes the calyx as rotate, but says the petals are narrowly spatulate. The species as now known is perhaps an aggregate.

4. **Ribes cereum** Dougl. Bot. Register, *pl. 1263.* 1829.

Inerme, foliis subrotundis obtuse trilobis crenatis viscidis, racemis 3-5 floris pendulis pubescentibus longitudine foliorum, calycibus tubulatis laciniis ovatis reflexis: petala subreniformia duplo excedentibus, bracteis cuneiformibus apice dentatis, baccis rubris glabris.

This bush is of more humble stature and slender habit than the one [*viscosissimum*] last mentioned, growing erect, about five or six feet high, with white smooth bark on the old branches. The young shoots which are curved and flexible, are

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covered with a brown, viscid, scentless, glutinous substance, which, when exposed to the sun, acquires a rough, hardened, waxy, warty, sppearance. The leaves are nearly round, bluntly three-lobed, crenate, scarcely an inch long, of a leathery texture, and almost veinless, clothed on the upper surface with white and (in dry weather) hardened waxy minute granulations, quite smooth below; footstalks somewhat longer than the leaves. The clusters are dense, of the same length as the leaves, three or five flowered, slightly pubescent, hanging in great profusion below the branches, with scarcely any partial footstalks; bracteas wedge-shaped, glandular and toothed at the apex. The calyx is tubular, imperfectly four-sided, white, pink at the base, three-fourths of an inch long, with rounded, short, reflected segments, double the length of the minute, somewhat kidney-shaped petals. Filaments same length as the petals; style slightly cloven. Berry spherical, small, red and glossy, thin skinned, rarely containing more than three large seeds, and a great quantity of insipid, viscid, red juice.

On dry exposed decayed granite rocks or schist, throughout the chain of the river Columbia from the great falls 45 degrees, 46 minutes, 17 seconds N. Lat. to the sources of that stream in the Rocky mountains 52 degrees, 07 minutes, 09 seconds. This is a common shrub, flowering in March and April, and ripening its fruit in June.

The above description is taken from the Transactions of the Horticultural Society, volume 7, page 512. 1830, and although according to the date is not the original one, is probably more complete, being by Douglas himself. This species, or probably aggregate of several species, is widely diffused, occurring throughout the entire Rocky Mountain system, and through the Sierras of California, crossing from thence by way of the Tehachapi into the high mountains of Ventura county in the southern Coast Range.

5. **Ribes viscosissimum** Pursh, Fl. Am. Sept. **1**: 163. 1814.

R. inerme; omnibus partibus pilis viscidis tectum; foliis cordatis obtuse trilobis serratis, racemis erectis brevibus, calyci-

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bus tubulatis, petalis oblongis, bracteis lineari-spathulatis pedicello duplo brevioribus germinibus hirsutis.

On the Rocky-mountain in the interior of North America. *M. Lewis.* June. *v. s. in Herb. Lewis.* Flowers large, yellow; the whole plant covered with viscous hairs. This species approaches near to *R. glandulosum. fl. peruv. 3. p. 13. t. 233. f. b.* It differs principally in the leaves being equally lobated, not having the middle lobe projecting; its long slender pedicels, and its petals.

Douglas, who was acquainted with this species in the field, gives the best description of it in Trans. Hort. Soc. 7: 511:

"This is a large branching bush, six to eight feet high, with perfectly smooth dark red bark; the viscid glandular pubescence which clothes the young shoots, like the preceding [*R. sanguineum*], disappears with the white, thin, deciduous bark in spring. The leaves are heart shaped, three-lobed, serrate on the edges, rugose and veiny, three and a half inches in length, two and a half in breadth, on footstalks of nearly equal length, everywhere clothed with a copious clammy, glandular pubescence, which emits when touched, a peculiar scent, like that of old apples. The flowerstalks are lax, nearly double the length of the leaves, equally pubescent and glutinous. The calyx fs tubular, short, swollen or ventricose in the middle, with lanceolate, spreading, and somewhat waved segments of a faint yellow color, fragrant. The petals are ovate, white, one-third shorter than the limb of the calyx, and of the same length with the stamens. Style slightly cloven. The berry is turbinate, the fourth of an inch long, hairy, dark brown or black, with a thick, tough skin. Like R. sanguineum, the seeds are small, very numerous, adhering together by a small quantity of colorless, slimy flnid, having no true pulp. The flavor of the berries is musky, or mawkish, and so disagreeable that two or three are sufficieot to produce vomiting. No animal, so far as I know, touches it, excepting a species of Myoxus, which feeds on the leaves and berries in summer, and on the bark during the winter months.

"It is an inhabitant only of the subalpine range of the highest mountains, abounding in dry fissures of limestone rocks, flowering in May, and ripening its fruit in August. On the hills around the Kettle Falls of the Columbia river, in 48° 37' 40" N. Latitude, 118° W. Longitude, at an elevatiou of 8ooo feet above the level of the sea, it forms a principal part of the brushwood, and is equally plentiful on the western declivities of the Rocky mountains, between the parallels of 46° and 52° N. Latitude."

The species is not uncommon in California in the northern Sierras, and occurs as far south as Mariposa county.

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6. **Ribes sanguineum** Pursh, Fl. Am. Sept. **1**: 164. 1814.

R. inerme; foliis cordatis trilobis serratis venoso-lineatis supra glabris, subtus tenui tomento albicantibus, racemis laxis pubescentibus foliis duplo longioribus, calycibus tubulatis, petalis oblongis longitudine calycis, bracteis obovato-spathulatis longitudine pedicellorum, geminibus hirsutis.

On the Columbia river. *M. Lewis.* March. *v. s. in Herb. Lewis.* Flowers beautiful, of a blood red or purple; branches purple. It approaches near to *R. albinervium. Fl. peruv. 3. p. 12. t. 232. f. b.*

Credited to California from Del Norte county. Douglas, who also gave an extended description of this species in Trans. Hort. Soc. 7: 509. 1830, says concerning its history: "So long ago as the year 1787, my esteemed friend, Archibald Menzies, Esq., during his first voyage around the world, discovered this species near Nootka Sound, and, subsequently on his second voyage with the celebrated Vancouver, in 1792, found it again on various points of the coast of North-west America. From that period to 1814, it lay unnoticed in our herbaria, when the above quoted author described it, partly from specimens collected in 1805 by the enterprising American travelers, Lewis and Clarke, during their memorable journey, and partly from specimens deposited by Mr. Menzies, in the Herbarium of the late Sir Joseph Banks, and that of the British Museum." Although Pursh may have examined the specimens collected by Menzies, his published description is based wholly upon the specimens of Lewis.

7. **Ribes Scuphami** Eastw. Proc. Cal. Acad. III. Bot. **2**: 242. *pl. 23. f. 2a and 2b.* 1902.

Shrub with the upper bark reddish, shreddy, puberulent, unarmed. Leaves orbicular, three- to five-lobed, truncate to reniform at base, 2-5cm. wide, about as long, unevenly dentate; upper surface pubescent with crisp, spreading hairs; lower canescent with matted hairs, stipular dilation of the petiole broad, glandular, and tomentose, fringed with glandular hairs; petioles about as long as the blades, with pubescence like the stipules. Racemes numerous at the ends of the branches, 9cm. long, slender, when flowering erect on peduncles which are shorter than the leaves; bracts oblanceolate, red, glandular, 8mm. long, denticulate at apex; pedicels filiform, erect, a little longer than the bracts. Flowers subtended by two small, red bracteoles which

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are soon deciduous. Calyx rose-color, with tube 5mm. long, divisions linear-oblong, 7mm. long. Petals white turning reddish, oblanceolate, cuneate, 4mm. long. Stamens a little shorter than the petals; anthers globular. Ovary sparingly pubescent, and with scattered, stipitate glands.

This is nearest to *Ribes sanguineum* Pursh. It differs especially in having the racemes erect in flower, also in the more slender flowers with narrower divisions. This species is the most beautiful of all belonging to the group of which *R. sanguineum* is the type.

It was collected on Smith River, Del Norte County, California, by Major J. R. Scupham, May, 1898. It is a pleasure to name this plant in honor of one who has brought many interesting plants to the herbarium of the California Academy of Sciences from little explored parts of California.

8. **Ribes glutinosum** Benth. Trans. Hort. Soc. II. **1**: 476. 1835.

Inerme, foliis cordatis subquinquelobis serratis venosis utrinque glabriusculis subviscosis, racemis 30-40 floris laxis pubescentibus folio duplo triplove longioribus, pedicellis flore longioribus, calycibus tubuloso-campanulatis: laciniis oblongis obtusis patentibus petala (rubra) integerrima superantibus, bracteis oblongo-lanceolatis, baccis turbinatis hirsutis.

The few plants raised of this species have not yet flowered, but from the dried specimens transmitted by Mr. Douglas, it promises to exceed the R. sanguineum in beauty; in foliage it only differs from that species by being destitute of down, and slightly viscous; but the bunches of flowers are twice the length, containing at least from thirty to forty flowers, which are borne on long slender pedicels. The flowers are red, but the dried state of the specimen does not admit of any opinion being formed as to the intensity of the color. It is quite hardy, and grows vigorously in common garden soil.

Torrey and Gray describe the style as 2-cleft at the apex, and Greene adds "berry blue with a dense bloom, and glandular-hispid." It is apparently re-

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stricted to the lower hills of the Coast mountains of middle California, from at least Monterey on the south to Sonoma on the north, growing on moist banks of streams and other damp places. Greene says "In flower from January (or even Dec.) to March." I have found it in bloom only in late March and early April.

In his Manual, 124. 1894, Greene describes a variety *melanocarpnm* of this species, which has "ripe *berries black*, without any trace of bloom," which occurs "at Berkeley, and in Santa Clara Co."

.9 **Ribes malvaceum** Smith, Rees Cycl. **30:** 1819.

Mallow-leaved Currant.—Leaves heart shaped, slightly five-lobed, serrated, veiny; hispid on both sides; densely downy beneath. Clusters hairy, longer than the leaves. Calyx tubular, hairy. Petals rounded, not half so long as the limb. Bracteas ovate, acute, jagged, half the length of the calyx.—Gathered in California, by Mr. Menzies. *Branches* dark purple, downy, like every part of the plant. *Leaves* an inch, or inch and half, long; dark green above; white, and densely downy, beneath; hispid on both sides with glandular bristles. *Stipulas* beautifully fringed. *Clusters* dense, on long, rough, glandular *stalks*. *Calyx* red, about half an inch long, hairy, especially its base and the *germen*. *Petals* wedge-shaped, rounded, somewhat cloven, scarcely one-third so long as the segments of the limb, which are elliptical. *Stamens* the length of the petals. *Bracteas* elegantly jagged and fringed. This fine species seems nearly allied to the last [*R. sanguineum*]. We have not at hand the *Flora Peruviana*, to ascertain how far it resembles any in that work.

Known definitely from Marin county, immediately north of San Francisco Bay, to Monterey county on the south, and especially on the outer Coast Range. It was probably first collected at Monterey, as it is not uncommon in the pine woods near that place. Greene says that it grows on "dry open hills," but I have never found it except among other shrubs, in places where there is considerable moisture during the winter and early summer months. The species is easily distinguished from *R. glutinosum* not only by the thick leaf, rugose above and white beneath, but by the shape of the calyx, the lobes in this species spreading rotately, while in *R. glutinosum* they are more erect, presenting a much longer appearance, and are of a deeper red as a rule. This species is the earliest bloomer, having been noted as early as December 10th on the hills west of Los Gatos, Santa Clara county, where it is abundant.

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10. **Ribes viridifolium** (Abrams)

Ribes malvaceum viridifolium Abrams, Bull. So. Cal. Acad. **1**: 67. 1902.

R. glutinosum, of local lists, not *R. glutinosum*, Benth. Shrub, 1-2m. high, rather compact, the young branchlets short pubescent and more or less densely glandular with stalked glands; leaves, rather thick, 3-7cm. broad, slightly or not at all rugose, bright green minutely scabrous and somewhat glandular with sessile glands above, pale and glandular-pubescent beneath; petioles beset with stalked glands, and more or less puberulent, dilated at base, the margins ciliate; inflorescence glandular-pubescent, racemes rather long, pedunculed, drooping, many-flowered; bracts ovate 1cm. long, ciliate toothed above; pedicels 3-4mm. long; calyx 2 bracteolate at base, rose color below, becoming nearly white above, its tube cylindric, pubescent within, 4mm. broad, 12mm. long, its lobes broadly ovate, rounded at apex, 4-5mm. long; petals rounded, 2mm. broad, obscurely cordate at base, its claw very short; anthers nearly sessile, 2mm. long: style 6-7mm. long, pubescent; berries becoming reflexed at maturity on short pedicels, pubescent and rather sparsely beset with coarse gland-tipped hairs, apparently purple, 1cm. long.

Wilson's Peak and Pasadena Trail, Los Angeles Co., No. 1525, April 15, 1901.

This differs from the type in having larger and greener foliage, more glandular inflorescence and larger floral organs, and like the type, it can easily be distinguished from *R. glutinosum* Benth, by its pubescent style and reflexed fruit. *R. glutinosum* has a glabrous style and the berries are on rather long, slender spreading pedicels.

This plant, fortunately so well described by Mr. Abrams, is certainly distinct from *R. malvaceum*, as may be seen by comparing the descriptions. It is different in the leaf, which is barely or not at all rugose above with sessile glands instead of strongly rugose, with stalked glands; under side of leaf merely pale and glandular instead of covered with a dense, short tomentum; the floral organs, except the petals and stamens, which are of equal size in both (2mm.) are twice larger, the petals of different shape, and the stigma not two-lobed as it is in *R. malvaceum*.

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11. **Ribes indecorum** Eastw. Proc. Cal. Acad. III. Bot. **2**: 243. *pl. 23. f. 3a. 3b.* 1902.

Shrub with erect stems, having dark brown, shreddy bark on the older growth, the younger parts tomentose and glandular. Leaves three-lobed, 2-4 cm. long, 2-3 cm. wide, finely rugose on the upper surface, clothed with stipitate glauds, and a fine, sparse, silky pubescence; lower surface white with a felt-like tomentum, and with a few gland-tipped hairs on the veins; margins irregularly, doubly crenate; petioles stout, shorter than or equalling the blades, glandular and tomentose, the stipular dilation (as wide on each side as the petiole) fringed on the margin with uneven, gland-tipped hairs. Inflorescence racemose, spreading or pendent, in fruit surpassing the leaves; flowers sessile but erect; peduncles short; bracts foliaceous, almost equalling the flowers, lanceolate, 6mm. long, 2mm. wide, with the margins fringed with long, gland-tipped hairs. Peduncles stout, glandular, and tomentose. Flowers at base subtended by two membranous, glandular, and tomentose bracteoles, calyx-tube more than twice as long as the broad, rounded divisions; these tomentose and glandular on both sides, almost 2mm. wide; petals orbicular, reniform, 1mm. wide, crenulate, on very short and broad claws. Stamens as long as the petals, on stout, short, deltoid filaments; anthers .75mm. long, longer than the filaments. Style stout, hairy at base, two-cleft at apex, with broad, yellow stigmas; ovary tomentose and somewhat glandular.

Collected by the author at Cajon Heights, near San Diego, California, March 14, 1891. There is also a specimen in the Herbarium of the California Academy of Sciences collected by Dr. George Thurber at San Pasqual, San Diego County. It is labeled *Ribes sanguineum*, No. 606.

Ribes indecorum is nearest to *Ribes malvaceum*, but differs most noticeably in the much smaller and sessile flowers. The floral organs, too, are not the same.

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Miss Eastwood has recently collected this specios in the Santa Iñez mountains, Santa Barbara county, and it probably will be found at other places between there and San Diego.

12. **Ribes Nevadense** Kellogg, Proc Cal. Acad. **1**: 63. 1855.

Ribes Navadaensis.—Kellogg. Stem and branches glabrous, the membranous purple bark of the older branches flakes and warps off like the nine-bark bush, or *Spiraea opulifolia.* Leaves about as long as the racemes, cordate, 3 to 5-lobed, doubly serrate, pubescent above and below; (neither glandular nor viscid), petioles puberulent and sparsely glandular; base somewhat expanded, ciliate; racemes from the same buds as the leaves, minutely puberulent and glandular; bracts red, like the flowers, lanceolate, acute, numerous; calyx globose campanulate, border expanding, petals roundish, shorter than the segments of the calyx or sub-equal, pedicels very short.

Fruit globose, glands few, black, with a dense bloom, pulpy and very sweet.

The following remarks occur just before the description of this species: "Dr. Kellogg also exhibited a complete drawing of a species of wild Black Mountain Currant, together with specimens of the bush and ripe fruit. The fruit is very sweet and pulpy, and by a little culture would undoubtedly improve in every respect. The fruit is large, black, covered with a dense bloom, and the bunch appears to yield bountifully." At the bottom of the colored drawing of this species, made by Dr. Kellogg, and preserved in the herbarium of the California Academy, is written: "From a specimen furnished by Mr. Garvett of Placerville."

13. **Ribes variegatum** (S. Wats.) Aven Nelsen, Key R. M. Pl. 34. 1902.

Ribes sanguineum var. *variegatum* S. Wats. Bot. King. Exped. 100. 1871.

Nearly glabrous throughout, with the petioles and peduncles glandular-puberulent, and the ovary somewhat glandular-hispid; flowers in short dense racemes, the pedicels about equaling the ovate reddish bracts; calyx campanulate, the tube very short, scarcely equaling the ovate deep rose-red segments; petals

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white, rounded, short; style deeply bifid.—Possibly a distinct species, but probably only an extreme form of *R. sanguineum* in those respects in which that species is most variable—pubescence, form of the calyx, and denseness of inflorescence. None of the specimens are yet in full flower. A branching shrub, 2-3 feet high; Washoe Mountains, near Carson City, on stream banks; 5,000 feet altitude; April. Collected also by Dr. Anderson. (381.)

This plant I do not definitely know, but it is said to occur in the northern Sierras, which is to be expected. The plant of the Rocky mountains, which Professor Nelson no doubt had in mind when publishing this combination, is probably *R Wolfii*, a distinct species, long relegated to synonymy.

14. **Ribes ascendens** Eastw. Proc. Cal. Acad. III. Bot. **2**: 244. *pl. 23. f. 4a. 4b.* 1902.

Erect shrub unarmed, with gray-brown bark on older stems, younger stems paler and shreddy. Leaves three- to five-lobed, orbicular, reniform, 3-6cm. wide, 2-5cm. long, crenate-dentate, almost glabrous on the upper surface, the lower clothed with fine, spreading pubescence; petioles equalling or shorter than the blades, glandular; stipular dilation narrow, fringed with long, gland-tipped hairs. Peduncles generally surpassing the leaves, at first erect, later nodding, glandular-pubescent; flowers crowded at the summit of the peduncle, which is naked for more than half its length; bracts oblanceolate, rounded at apex, 7mm. long, 2mm. wide, with gland-tipped hairs on the surface and margin; pedicels half as long as the bracts, lengthening with age, and recurving upwards, so that the berries are erect. Flowers subtended by two membranous bracteoles which are soon deciduous. Calyx open-campanulate, rose-color, the tube about half as long as the divisions; these ovate, obtuse, 3.5mm. long, 2.5mm. wide, slightly pubescent. Petals white, orbicular, narrowed to a short, broad claw, 2mm. wide. Stamens not equalling the petals, filaments linear, anthers oblong. Ovary clothed with gland-tipped hairs. Berry veiny, sparingly glandular, becoming 7mm. or more in diameter.

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This species is near *R. nevadense* Kellogg, but the racemes are ascending when in flower. The floral organs also differ in shape.

The type was collected by the author at Millwood, (Sequoia Mills) Fresno County, California, in flower, May 4, 1895; in fruit, July 18, 1893. There are specimens from General Grant Grove in the same vicinity, and from Coburn's Mills in Fresno County, collected by T. S. Brandegee; the former, July, 1892, the latter, May 29 (year not given).

Ribes ascendens Jasperae Eastw. Proc. Cal. Acad. III. Bot. **2**: 244. *pl. 24. f. 5.* 1902.

This is similar to the species in general appearance, but the sepals and petals are more orbicular, the filaments are shorter, and the anthers broader and more orbicular. It is named in honor of Mrs. William Jasper, who sent the specimens from San Emidio Canon, Kern County, California, May, 1895.

15. **Ribes Hittellianum** Eastw. Proc. Cal. Acad. III. Bot. **2**: 245. *pl. 24. f. 6a. 6b.* 1902.

Erect shrub with spreading branches, 2-3 feet high; bark smooth, unarmed, gray-brown, shreddy on the younger branches. Leaves three- to five lobed, orbicular, reniform or truncate at base, 3-4cm. wide, 2-3cm. long, irregularly dentate and somewhat revolute, rugulose veiny, glabrous on both sides but with some scattered glands on the lower; petioles about as long as the blades, sparingly tomentose and glandular; stipular dilation broad, truncate, membranous, as wide on each side as the petiole. Racemes 1-2cm. long, at first erect, later nodding, but with the pedicels erect; flowers three to eight, crowded, subtended by deciduous bracteoles. Calyx tubular-campanulate, with the tube 1mm. long, the divisions rose-color, oblong, obtuse, 4mm. long, 2mm. wide. Petals white, narrowly oblong, three-fourths as long as the sepals and one-half as wide. Stamens with subulate filaments, half as long as the sepals; anthers

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orbicular. Stigmas two, capitate; ovary and immature fruit clothed with stipitate glands.

This species belongs in the group of which *R. nevadense* Kellogg is the type. It differs from that species in the inflorescence and the shape of the floral organs.

Collected near the head-waters of Canon Creek, Trinity County, California, not far from Twin Lakes, July 9, 1901, and named in honor of Mr. Carlos T. Hittell, one of the party on a trip to these little known mountains.

16. **Ribes glaucescens** Eastw. Proc. Cal. Acad. III. Bot. **2**: 245. *pl. 24. f. 7a. 7b.* 1902.

Unarmed shrub with older bark gray-brown, younger bark bright brown glossy, shreddy. Leaves three-lobed, orbicular-reniform, about 3cm. long, 3.5cm. wide, irregularly dentate, glabrous except for some minute glands on the lower surface, glaucescent, paler on the lower surface; petioles about as long as the blade, minutely puberulent, with the stipular dilation on each side narrower than the petiole, and sparingly fringed with glandular hairs. Inflorescence in fruit spreading or erect, generally shorter than the leaves, rather loosely flowered with from five to ten flowers; peduncles as long as the raceme, striate, puberulent; pedicels slender, becoming 5mm. long, shorter than the brown, membranous, gland-tipped bracts. Flowers subtended by two small, deciduous, reddish bracteoles. Calyx open-campanulate, with very short tube, and spreading divisions; these rose-color, oblanceolate, 4mm. long, 1.5mm. wide, glabrous. Petals white, spatulate, two-thirds as long as the sepals, denticulate near the apex. Stamens half as long as the sepals, with suborbicular anthers and broad filaments. Ovary glabrous except for the scattered stipitate glands.

This species is related to *Ribes nevadense* Kellogg from which it differs in the glaucous color of its foliage, the racemes erect in fruit, and the shape of the floral organs. It was collected by the author on Mount Shasta, August 13, 1893. No

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note was taken of the exact locality, but it must have been some place on the trail from Sisson.

No. 5889 of my collection of 1902, from Mt. Sanhedrin, Lake county, has been referred to this species, although it is not quite typical. The range is thus considerably extended, and it no doubt occurs on other high mountains of the north Coast Range.

17. **Ribes viburnifolium** A. Gray, Proc. Am. Acad. **17:** 202. 1882.

Ribesia, modo *R. nigri* resinoso-atomiferis; foliis ovato-rotundis utrinque obtusissimis (nec cordatis nec plicatis) inciso-paucidentatis nunc obsolete trilobis glabris (petiolo excepto) demum coriaceis (pollicem longis): racemo subsessili corymbiformi plurifloro, pedicellis filiformibus, bracteis scariosis caducis; calycis tubo turbinato demum oblongo, limbo rotato 5-partito roseo, lobis ovalibus; petalis minimis patentissimis viridulis filamentisque brevissimis margini disco lato plano insertis.—Northern part of lower California, near All Saints Bay, *Parry*, *Pringle*, and *Marcus Jones*, April, 1882. A straggling bush, so peculiar that the acute collectors did not recognize the genus. Yet the flowers have all the characters of the *Ribesia* section, and the coaspicuoos glands of the leaves, young shoots, pedicels, &c., are just like those of *R. nigrum*.

This species has been found on Santa Catalina, and probably occurs on some of the other islands off the coast of California, but I believe has not been reported from the mainland.

18. **Ribes lacustre** (Pers.) Poir. in Lam. Encycl. Supp. **2:** 856. 1811.

Ribes oxyacanthoides var. *lacustre* Pers. Syn. **1:** 252. 1805.

Specimens labeled with the name ot this species have been found in Mendocino county, and there are others collected by Chandler on "ridges and meadows near Marble Mountain, Sfskiyou county." It is hardly possible that our plant is really *R. lacustre*, but if it is, it is the only far eastern species in this genus which has reached the Pacific coast. It is probably *R. echinatum*, described as follows by Douglas in Trans. Hort. Soc. 7: 517. 1830:

"Aculeis quinis axillaribus, ramis ominino reclinatis hispidulis, foliis 5 lobis glabris, racemibus nutantibus multifloris folio longioribus, pedicellis germinibus-

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que piloso-glandulosis, calycibus campanulatis, bracteis ovatis ciliatis, baccis hirsutis.

"Branches slender, reclining, rarely divided, thickly clothed with long, sharp, bristly, brown prickles; these are five or seven in number, large, long, flattened, and combined under the buds. Leaves five lobed, smooth on both sides, unequally toothed, on slightly pilose petioles, which are shorter than the leaves. The flowers hang in a lax, slender raceme, nearly double the length of the leaves; the partial footstalks and germen covered with brown glandular hairs; bractae ovate, half the length of the pedicels. Calyx bell-shaped, with rounded, spreading, and somewhat reflected segments, brownish-yellow, with a dark rim, scarcely longer than the rounded petals. Berries black, hairy, small, of a pleasant taste.

"This species in several respects is nearly related to *R. lacustre*. The depressed habit, the much more copious clothing of longer and stronger prickles, the less divided and perfectly smooth leaves, the black-rimmed calyx and black fruit, render it truly distinct. I have not seen R. armatum of the Linnaean herbarium, but I suspect that species to be still more nearly akin to the one now noticed.

"It is a common trailing shrub, on dry shelving rocky places on the mountains, at the grand rapids on the Columbia, and on the monntains of northern California, never frequenting edges of rills or swampy ground in shady woods among Carices, as R. lacustre does. This species flowered for the first time in the Society's garden last April."

19. **Ribes lentum** (Jones) Coville and Rose, Proc. Biol. Soc. Wash. **15**: 26. 1902.

Ribes lacustre var. ***molle*** A. Gray, Bot. Cal. **1**: 206. 1876.

Ribes lacustre var. ***lentum*** Jones, Proc. Cal. Acad. II. **5**: 681. 1895.

Ribes molle Howell, Fl. N. W. Am. 209. 1898, not Poepp. 1858.

Ribes nubigenum McClatchie, Erythea, **2**: 80. 1894, not Phil. 1856.

Ribes montigenum McClatchie, Erythea, **5**: 38. 1897.

R. lacustre, Poiret, var. **molle,** Gray. A foot or two high, much branched: branches bristly-prickly or naked, armed with short triple or multiple thorns under the fascicles: leaves small (usually about an inch in diameter), downy-pubescent, roundish in outline, 5-parted, and the lobes incisely toothed and cleft: racemes 5-9 flowered, short-peduncled: flowers greenish-

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white; the open calyx 3 lines in diameter, its short lobes rounded: small petals and stamens very short: berry light red, not larger than peas, acid (intermediate between a gooseberry and a currant), sometimes nearly or quite naked.

In the Sierra Nevada at 6,000 to 10,000 feet, from Mariposa Co. northward.

Jones gives a very meagre description of this plant: "Densely covered throughout with a yellowish, viscous pubescence, as well as soft hairs. This is the common form throughout the mountain region of Utah and Nevada, the pubescence being so viscous as to stain the sheets yellow in which the plants were collected. It is possible that the glutinous pubescence was overlooked in Gray's type of var. *molle*, in that case this will be identical with it."

Howell's description adds nothing to the original one of Gray, and the only difference in McClatchie's description of *R. nubigenum* is that the leaves are only about half as large. He adds the character "anthers broader than long, deeply lobed."

In specimens of my own collecting at Donner Pass, in Placer county, the calyx is yellow, about 5mm. across, the purplish fan-shaped petals are only a little more than 1mm. high on a short claw half as wide as the petal: stamens unequal, some as long as and some shorter than the petals, inserted on a thin erect rim or disc, which forms a reddish center to the calyx. The anthers are broader than long, deeply notched, as described by McClatchie.

It is a widely distributed plant, occurring throughout California in the high Sierras, and, as mentioned before, in the southern Coast Range, and extends east into the Rocky mountains.

20. **Ribes Menziesii** Pursh. Fl. Am. Sept. **2**: 732. 1814.
Ribes ferox Smith, Rees Cycl. **30**: 1819.

R. sub gemnis 3-plicato-aculeatum; ramis hispidissimis, foliis basi truncatis sub 5-lobis inciso-dentatis, lobis lateralibus brevioribus, subtus tomentosis, pedunculis subbifloris foliis subaequantibus, calycibus tubulosis: limbo patente, staminibus longitudine calycis, stylo exerto, baccis globosis aculeatis.

On the north-west coast, near Fort Trinidad. *Menzies. v. s. in Herb. Banks.* The flowers of the size and colour of *R. sanguineum.*

R. ferox Smith, is an undoubted synonym, as it is based on the same specimens, for smith says: "Gathered by Mr. Menzies, near Port Trinidad, in California." Greene, in Fl. Franciscana, 202, says this species occurs from Humboldt county to Santa Barbara, but it hardly occurs south of San Francisco Bay, unless in places quite near the ocean. It is badly mixed in the Botany of Cali-

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fornia, where it is made to include at least three other species in the coast region alone, and none of the forms credited to it from the Sierras belong with it, for it does not occur there at all. It extends into Oregon, and perhaps into Washington on the north.

21. **Ribes hystrix** Eastw. Proc. Cal. Acad. III. Bot. **2**: 248. *pl. 24. f. 10a-10b.* 1902.

Shrub several feet high, with light brown, tortuous branches, minutely pubescent and thickly beset with stout, rigid, horizontal, yellow prickles, some gland-tipped, generally small on the new growth, and increasing in size with age; axillary thorns triple, stout, distinct at base, middle one longest, becoming 15mm. long, lower part pubescent, upper glabrous. Leaves thin, three-lobed or some five-lobed, with the basal lobes small, 2-4cm. wide, orbicular reniform, incisely dentate, minutely pubescent and dotted with sessile glands on the lower surface, almost glabrous on the upper; petioles about as long as the blade, tomentose and slightly glandular. Peduncles one- to three-flowered, 1-2cm. long, ascending, slender, sparingly pilose and clothed with gland-tipped hairs; pedicels less than half as long, occasionally longer; bracts orbicular or lobed, clasping, acuminate to obtuse. Calyx pubescent and glandular; tube a little longer than the ovary; divisions 1cm. long, surpassing the rest of the flower when reflexed, 3mm. wide, lower part purple, near the apex greenish, obtuse. Petals white, broadly obovate when spread out, acute, narrowed to a short claw, involute, 4mm. long. Stamens with broad filaments dilated at base, as broad and long as the anthers; these about 3mm. long, sagittate at base, tipped with a blunt mucro. Styles surpassing the sepals in the opening flower, divided about half; stigmas small, capitate; ovary globular, tomentose, and densely clothed with purplish bristles, some near the calyx gland-tipped. Fruit purple, more or less densely clothed with stiff, spreading prickles, 2-5mm. long.

This species is nearest to *R. Menziesii* Pursh but differs in the glandular pubescence, the shape and texture of the leaves, the size of the flower, and shape of the parts.

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Collected in flower by Mr. R. A. Plaskett, at Gorda, Santa Lucia Mountains, California, December, 1897. The fruiting specimens were collected by the author at Pacific Valley, in the same vicinity, May, 1897, and June. 1893.

22. **Ribes Californicum** H. & A. Bot. Beechy, 346. 1840.

Glabrum, ramis nudis, spinis stipularibus ternis, foliis cordato-reniformibus, 3-5-lobis, lobis subincisis, pedunculis 1-3-floris, bracteis rotundato-ovatis, calycis tubo brevi, laciniis ovato-lanceolatis tubo 3-plo longioribus demum reflexis apice glabris, staminibus petala triplo superantibus styloque simplici glabris, ovario glanduloso-piloso.

This differs from *R. niveum*, Lindl. (with which we are only acquainted from the figure in the *Bot. Register*), besides what is pointed out in the above diagnosis, by the erect, or rather patulous, not connivent stamens.

Strangely enough, this species is confused in the Botany of California with *R. Menziesii*, from which it differs in several important particulars, as may be seen by consulting the descriptions and key. The calyx is greenish-white, with some trace of purple. Jepson seems to think it is too close to *R. Victoris*, but we fail to see the reason, as nearly all the characters are dissimilar. I have collected it on hills neat Santa Rosa, where it occurs as a rather compact shrub three or four feet high, flowering about the middle of March. The berry is globose, 5 or 6mm. in diameter. It is said to be common on the Berkeley hills, and the type was probably collected there by Douglas, who obtained it "near San Francisco or Monterey not far from the coast." I do not remember seeing it about Monterey.

23. **Ribes occidentale** H. & A. Bot. Beechy, 346. 1840.

Glabrum, ramis nudis, spinis stipularibus solitariis foliis cordato-reniformibus 3-5-lobis, lobis incisis, pedunculis 1-3-floris, calycis laciniis oblongis tubo sublongioribus demum reflexis apice pedicellatis staminibus petala triplo longioribus glabris, stylo glabro ultra medium bifido stamina superante, ovario echinato.

The stamens in this and the next species [*subvestitum*], as well as in the last [*Californicum*], have their anthers ovate

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much larger in propostion to the flower than is usual in the genus, and tipped with a distinct blue mucro.

This species is abundant about Los Gatos, Santa Clara county, where it blooms early in March. It was also collected near Santa Rosa, Sonoma county, in 1902. I collected it this season under the impression that it was *R. Californicum*, but upon referring to the description of that species by Greene in Fl. Franciscana, 201, various differences were noted. Turning to Torrey and Gray, Fl. N. A. 1: 548, our plant was found to agree with their description of *R. occidentale*, and I think the species should be recognized. The following description was drawn up from fresh material:

Shrub 1-2m. high, often growing in dense symmetrical clumps: the branches zigzag, rigid, young growth puberulent: subaxillary spines ternate, straight, rather stout, about 1cm. long: leaves bright green, broadly ovate-orbicular, truncate or cordate at base, variable in size, the largest about 2cm across, more or less 5-lobed, the lobes somewhat incised, glabrous, but the petioles of about 1cm. more or less pubescent with downwardly pointed hairs: peduncles almost filiform, 1cm. or more in length, usually drooping, puberulent, bearing 1-2 flowers: pedicels short, about 3mm. pubescent, each subtended by a small round-ovate short-acuminate ciliate bract of less than 2mm. which is almost connate-perfoliate: calyx tube about 3mm. long, almost tubular, only slightly enlarged above, greenish with a tinge of red, the oblong-lanceolate acute reflexed segments about 7mm. long, 2mm. wide, reddish below, greenish above: petals white, about 4mm. long, strongly involute, truncate and slightly erose at apex: filaments 8mm. long; anthers lance-oblong, a little less than 2mm., mucronate, pale yellow: style 9mm. long, cleft almost to the middle: berry globose, about 6mm. in diameter, wine-red, sparingly armed with red spines but not glandular.

24. **Ribes oligacanthum** Eastw. Proc. Cal. Acad. III. Bot. 2: 246. *pl. 24. f. 8a. 8b.*

Erect, branching shrub with the younger stems puberulent, older gray-brown, not shreddy, somewhat tortuous, unarmed, except for the simple or triple thorns at the leaf-axils; these often short and abortive. Leaves broadly ovate or orbicular, three- to five-lobed, 2-3cm. wide and about as long, with margin laciniate-dentate, base truncate, but cuneate where it joins the petiole, glabrous; petioles slender, as long as or twice as long as the blades, glabrous or puberulent; stipular dilation twice as wide as the petiole, ciliate with white, silky hairs. Peduncles filiform, one- to three-flowered, 1-2cm. long; pedicels almost as long, together becoming 4cm. long, slightly puberulent; bracts

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broadly ovate to orbicular, acuminate, three-angled, clasping, reflexed. Calyx 12mm. long, the linear, acute segments more than twice as long as the tube, 2mm. wide, apparently white, veined with parallel veins that branch near the apex, puberulent or glabrous. Petals involute, obovate when spread out, irregularly denticulate at apex, 3mm. long, veins palmate. Filaments almost twice as long as the petals, dilated at base; anthers oblong-ovate, cordate at base, tipped with a recurved mucro. Style divided two-thirds of its length, slightly exserted. Young fruit puberulent, clothed with a few long spines (about ten) each about 5mm. long.

Related to *Ribes californicum* Hook. & Arn. from which it differs in the sparsely spinous fruit, the glabrous leaves, the lax inflorescence, and the shape of the floral organs.

Collected by the author on the road between Jolon and King City, in Monterey County, California, near Mansfield's Ranch, ten miles from King City, May, 1897.

This species is really more closely related to *R. occidentale* than to *R. Californicum*, but is distinct from both.

25. **Ribes Victoris** Greene, Pittonia, **1**: 224. 1888.

A somewhat slender spinescent shrub, 5 feet high, younger branches very prickly, young growing parts puberulent and somewhat viscid: leaves an inch broad, 3 to 5-lobed, on slender petioles subtended by not very stout triple spines: pedicels with 1 or 2 persistent entire bracts and as many large nodding greenish white flowers: calyx-lobes linear-oblong, recurved: petals acutish at apex, and erose-toothed: filaments not exceeding the petals; anthers ovate-oblong, broad but not sagittate at base, obtusish at apex but not mucronate: ovary glandular-hirsute: fruit unknown.

Collected near the base of Mt. Tamalpais, in Marin County, California, by Mr. Victor K. Chesnut, a pupil of mine to whom I gladly dedicate the species; also by Dr. C. C. Parry, in Rutherford Canon, Napa Valley, in May, 1887: nearly related to *R.*

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Menziesii, but with very different petals and anthers. It is perhaps no great rarity in that botanically almost unexplored range of mountains which separates the Santa Rosa and Napa Valleys.

Jepson, Flora West. Mid. Cal. 274, describes the fruit as "golden yellow, 7 or 8 lines in diameter, densely covered with slender prickles," but fails to state that it is oval in shape and the "slender prickles" are little more than stout hairs, which are very glandular. He also states that the filaments are "stoutish, much surpassing the petals," a character directly opposite to that originally given by Greene. This statement, backed up by a specimen in my possession which I had every reason to believe was correctly determined, led me to place the species where it does not belong in the key. It should have a position immediately after *R. hystrix*, under "filaments scarcely exceeding the petals," for as described by Professor Greene, "filaments not exceeding the petals," is most undoubtedly correct. My own No. 5773, collected along Sonoma creek at the foot of Mt. Hood, Sonoma county, June 26, 1902, may be taken as typical. These specimens bear well developed fruit as well as the persistent flowers, and answer well to the original description. The range appears to be the same as given above by Professor Greene, namely, Marin, Sonoma and Napa counties.

26. **Ribes Mariposanum** Congdon, Erythea, 7: 183. 1899.

A straggling shrub, 3 to 5 feet high, with long, slender branches, which have few prickles. Leaves about 1 in. in diameter, moderately 3 to 5 lobed, thin; their under surface as well as the young shoots softly pubescent. Flowers very large, three-fourths in. in diameter and fully 1 in. long, usually in pairs at the bracted summit of a stout erect or ascending (rarely pendant) peduncle one and one-half to two in. long. Floral characters otherwise much as in R. Menziesii. Ovary densely glandular bnt not prickly. Fruit not prickly, yellowish when ripe, with a thick, tough, shagreen-like skin, which is strongly glandular and gives a nauseous taste to the otherwise sweetish and edible pulp.

Flowers May 15 to June 1, and the fruit ripens in September. This species is limited to the coniferoua belt in the mountains between 3,500 and 5,000 ft. It is reported as abundant in the Sierras further south, and its nauseous fruit is well known to the mountaineers.

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27. **Ribes subvestitum** H. & A. Bot. Beechy, 346. 1840.

Glanduloso-pubescens (foliis supra exceptis), ramis rigide setosis, spinis stipularibus 3-4 gracilibus, foliis cordatis 3-5 lobis supra parce pilosis, lobis incisis, pedunculis 1-3 floris, calycis pubescenti-glandulosi tubo ovarium subduplo superante laciniis oblongis parium breviore, staminibus petala duplo superantibus glabris, stylo glabro simplici (nunc bifido!), ovario piloso-glanduloso.

In all the flowers except one the style is decidedly simple, but in that one it is bifid to near the middle. The whole plant, with the exception of the upper side of the leaves, is covered with a glandular pubescence: the ovarium, although glandular and hairy, exhibits no tendency to become a prickly fruit

Greene says this species is "very common in the Coast Ranges from at least Sonoma Co. to Monterey. March, April." Jepson includes it under *R. Menziesii*, but judging from his description in Fl. Mid. W. Cal. 274, he had only *subvestitum* at hand. Personally, I have found the species only in the Santa Cruz mountains about Los Gatos, Santa Clara county, where it is abundant in and on the edges of thickets, especially on the moister northerly slopes. It ascends to an elevation of at least 1500 feet, but is most abundant at 1000 feet and under, ranging somewhat higher than *R. occidentale*. Although Hooker and Arnott give "near San Francisco or Monterey not far from the coast," as the habitat of all of the plants mentioned by them in that part of their work, it is altogether likely that Douglas collected this species near the site of the present town of Los Gatos, lying as it does along the old road connecting the Missions of Santa Clara and Santa Cruz. My own explorations in both Sonoma and Monterey counties failed to bring this species to light, and if I remember rightly, it is represented in the herbarium of the California Academy of Sciences by only one or two specimens from San Mateo county, which would limit it to San Mateo and Santa Clara counties. The following description was made from living specimens collected early in March, but in all the flowers examined the style wus bifid, in some cases cleft almost to the middle:

Shrub 1-2m. high, often with few, slender, branches: stems grayish, the young growth especially spiny and glandular: infrastipular spines commonly 3, sometimes 4 or 5, slender, needle-shaped, somewhat declined, pale brown or yellowish, 10-12mm. long: leaves cordate, roundish, the largest about 5cm. across, 3-lobed, incisely crenate, the lateral lobes noticeably so, the whole thus appearing somewhat 5-lobed, rather thin, bright green above, somewhat paler beneath, both sides glandular pubescent; petioles commonly as long as the blade, glandular pubescent: peduncles ordinarily one-flowered, about 2cm. long, glandular, with a small, 2mm. long rounded connate fringed bract just

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below the ovary, this, as well as the ovary and outside of the calyx glandular: flower about 14mm. long, the tube cylindrical-campanulate, greenish, 3mm. long, 4mm. wide across the top, lobes oblong-lanceolate, 1cm. long, acute, greenish without, maroon-purple within: petals white, 4mm. long, strongly involute, somewhat toothed, cuneate when spread out: filaments white, awl-shaped, 6mm. long; anthers yellow, slightly over 2mm. long, lanceolate with slightly cordate base, the apex mucronate: style equalling or slightly exceeding the opening calyx, cleft for 2mm. or more.

The fruit of this species is, as described by Greene, large, densely clothed with short, stiff, gland-tipped hairs. I have seen it only in the immature state, when it appeared to be yellowish, and somewhat oval in shape, thus resembling the fruit of *R. Victoris*.

28. **Ribes sericeum** Eastw. Proc. Cal. Acad. III. Bot. **2**: 246. *pl. 24. f. 9a-9f.* 1902.

Erect, branching shrub, several feet high; stem clothed with numerous fine, weak, short prickles, which are gland-tipped on the young shoots, also with short, close, silky pubescence; axillary thorns three, orange-color, stout, united, the middle one longest, more than 1cm. long, broadening at the base, pubescent and glandular on the lower part, glabrous on the upper. Leaves thin, three- to five-lobed, broadly ovate-orbicular, reniform or truncate at base, 2-4cm. long, not quite so wide, incised crenate, clothed with fine, white, silky hairs which are appressed or spreading, also with fine gland-tipped hairs; petioles about as long as the blades, more glandular and more spreading-pilose, dilated only at the very base, and without the appearance of stipules. Peduncles one- to three-flowered, slender, erect, with pubescence like the petioles; pedicels about half as long; bracts orbicular or three-lobed, foliaceous; bractlets similar but smaller. Flowers 2cm. long, open-campanulate in the bud. Calyx with the divisions at length reflexed, longer than the tube and the ovary, oblong, purplish red, greenish near the apex, softly silky villous on both sides; tube campanulate, veined, slightly glandular at base. Petals white, 5mm. long, involute, erose along the almost truncate apex. Stamens with filiform, purple filaments, exserted beyond the sepals in the opening flower, and also beyond the pistil; anthers narrowly linear-oblong, almost

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2mm. long, obtuse. Pistil two-cleft for 2mm. Ovary densely clothed with horizontally spreading fine, silky hairs mixed with some longer, glandular hairs, the glands purple. Fruit purple, clothed with short, weak bristles and scattered hairs. Some of the bristles retain the purple glands on the fruit.

Collected in flower by Mr. R. A. Plaskett, at Spruce Creek; also at Gorda, in flower and fruit. Collected by the author at Pacific Valley, with immature fruit. *R. sericeum* flowers in December and January and fruits in June. At Point Sur specimens were collected by the author in June, 1893, with very large, pear-shaped fruit, almost 4cm. long, and specimens with globular fruit were collected at about the same time at Slate's Hot Springs. All these localities are on the coast of Monterey County, California, at the base of the Santa Lucia Mountains, and the range extends from south of Point Gorda to north of Point Sur.

Ribes sericeum is related to *R. subvestitum* Hook. & Arn. but it has different leaves, different pubescence, and the floral organs are not the same.

Ribes sericeum viridescens Eastw. Proc. Cal. Acad. III. Bot. **2**: 247. 1902.

The variety is similar to the type, but the flowers are smaller and greenish, the leaves are more densely clothed with silky white hairs, and are more orbicular-reniform. The peduncles in the specimens examined all have single flowers.

This variety was collected by R. A. Plaskett at Gorda, Monterey County, California, January, 1898.

29. **Ribes Lobbii** A. Gray, Am. Nat. **10**: 274. 1876.

R. Lobbii Gray. I am under the necessity of giving a name to this little known but apparently very distinct species. It is figured by Hooker in the *Botanical Magazine*, tab. 4931, as *R. subvestitum* Hook. and Arn., from a Californian plant sent by the late Mr. Lobb (whether seeds or young plants is not men-

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tioned, probably seeds) to his employers, Messrs. Veitch and Son. But the only specimens I have seen are one, exactly agreeing with the plate, from Kew, ticketed "Vancouver's Island, Wood," and another, from the Willamette, in the same region, collected by Mr. Howell. It should be particularly looked for in California, north of San Francisco Bay, and along the coast to British Columbia. Perhaps the Californian habitat is an error. The species may be distinguished by its dark, purplish-red calyx of half an inch in length, not counting the ovary, nearly white petals half the length of the stamens, very glandular but unarmed ovary, and especially by the short, oval, and very blunt anthers, which are dotted with a few warty glands on the back.

This occurs in California on the highest summits of the north Coast Range from Lake and Mendocino counties northward.

30. **Ribes Marshallii** Greene, Pittonia, **1**: 31. 1887.

Glabrous, the branches armed with stout, but rather short, triple spines: leaves roundish, 5-lobed, the lobes incised: peduncles 1-flowered: flowers pendulous, an inch long; calyx-segments elongated-oblong, spreading or recurved, dark purple; petals 2-3 lines long, spatulate-oblong, salmon-color: filaments slender, more than one-half inch long; anthers very small, three-fourths line long, oblong, obtuse at both ends; ovary bristly.

Summit of Trinity Mountains, California, July, 1886, found near lingering snow-drifts, by Mr. C. C. Marshall. This gooseberry is in some sense intermediate between *R. Menziesii* and *R. Lobbii*, and the flowers are remarkably large and handsome, even surpassing those of *R. speciosum* in all save brilliancy of color.

31. **Ribes amictum** Greene, Pittonia, **1**: 69. 1887.

Cinereous-tomentose or glabrate, branches not prickly, but with stout short triple thorns at the nodes: leaves small, 3-5-lobed: peduncles 1-flowered, the bracts solitary, cucullate, com-

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pletely enwrapping the ovary, deciduous, its margin entire, in pubescent forms tomentose-ciliate, in other forms nearly naked: calyx dark purple, 4-6 lines long, cylindrical-tubular with reflexed segments: filaments subulate, scarcely exceeding the erose-dentate involute white petals; anthers a line long, ovate, acute, tipped with a blunt or even truncate mucro: ovary prickly.

Interior valleys of Humboldt County, California, near Garberville, Miss Bush; also in Hoopa Valley, Mr. C. C. Marshall, 1887.

Shrub with the aspect of *R. Menziesii*, from which it is readily distinguished by the solitary deciduous bract which, until it falls away, enfolds the ovary. The proportions of tube and limb of the calyx are no less distinctive, the former being long, cylindrical and 10-striate. I am obliged to admit, as forms of one species, the almost hoary shrub of the Garberville region and the nearly glabrous one of the district farther north. This kind of variability is somewhat common on this coast, among the species of *Ribes*. My *R. velutinum* (Bull. Cal. Acad. i. 83), which, as I know it in northern California, is covered all over, even to the fruit, with an almost velvety pubescence, I now have from Mr. Cusick, of northern Oregon, in a perfectly glabrous state.

As might be inferred, the above description includes two species, the glabrate plant from Hoopa Valley later being referred to *R. cruentum*. *R. amictum* is common in the northern Sierras, in fact more so than in the type region. It is also reported from the southern Sierras, but specimens from that region are probably referable to some other species.

32. **Ribes Wilsonianum** Greene, Erythea, **3**: 70. 1895.

Rigid and low shrub, with smooth branchlets and 1 to 3 spines at each node: growing parts and leaves more or less villous with a short pubescence: leaves small, rounded, 5-lobed, the lobes and teeth acute: peduncles rather slender, mostly 3-flowered: bracts persistent, broadly ovate, acuminate-cuspidate, villous: ovary short-prickly, scarcely villous: calyx dark red, the

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cylindric or slightly funnelform tube 3 lines long; segments acute, about as long: petals scarcely a line long, thinnish, white with red veins, cuneate-quadrate, nearly truncate and scarcely erose at apex, and with narrow and abruptly inflexed margins: filaments scarcely equalling the petals; anthers connivent, with prominent cusp bent outwards.

This has been grown for two seasons in the Botanic Garden at Berkeley, the living shrub having been sent from the mountains of Kern Co. Calif., in 1893, by Norman C. Wilson. Herbarium specimens of the same, I had, in the *Flora Franciscana*, referred to *R. amictum;* but the living plant is of very different aspect, and the floral characters of the new species are excellent.

33. **Ribes cruentum** Greene, Pittonia, **4**: 35. 1899.

Shrub of the size and habit of *R. amictum*, but wholly glabrous, leaves with their lobes less crenate; flowers larger, the whole calyx with its almost cylindric tube and long spreading segments deep crimson: petals white or pink, not strongly involute, laciniate-dentate across the obtuse apex: ovary and berry strongly aculeate.

Species common in the Californian Coast Range, from Sonoma Co. northward into southern Oregon. Some specimens of it were present when *R. amictum* was first described, and from these the term "glabrate" found place in the diagnosis, the specimens cited from Hoopa Valley being of the present species, not the true *R. amictum*. This last, though occurring at the north as far westward as the interior of Humboldt Co., is properly a shrub of the Sierra Nevada; is always tomentulose even to the outside of the calyx, and has a shorter broader flower, with quite different petals, these being only erose-dentate, and much thicker and more waxy in appearance than those of *R. cruentum*.

The flower of this species is not well described. The calyx is about 13mm. long when opening, the finally reflexed lobes about 7mm. The petals are only a little shorter than the subulate filaments; anthers purplish, 2mm. long, base rounded, the apex tipped with a rather slender, prominent mucro: style a little

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longer than the stamens, cleft for 2mm., the whole barely included within the calyx when the lobes are not reflexed. Jepson makes no mention of this species in his Flora, and it certainly is not referable to any other species known within the region covered by his work.

34. **Ribes aridum** Greene, Pittonia, **4**: 35. 1899.

Near *R. amictum*, the stems much stouter, rigid and flexuous, with puberulent bark, the nodes bearing short very stout recurved triple spines: leaves small, canescently hirtellous on both faces: peduncles 2-flowered; calyx-tube funnelform, the lobes oblong, the whole calyx hoary-tomentulose, dark-red within: fruits small, armed with short and stout (slender-conical) spines, in maturity bursting on one side and ejecting the pulpy mass of the seeds, the pericarps persisting during the succeeding winter.

A remarkable species, discovered among the arid foothills of the Californian Sierra near Caliente, Kern County, in 1893, by Mr. N. C. Wilson. The specimens are scarcely yet in flower, having been collected in January, but show buds near the time of expansion, the branches being still loaded with the dry pericarps of the preceding year. The characters of the branches, spines and foliage alone, would abundantly distinguish the species from *R. amictum* to which I at the time too hastily referred the specimens.

35. **Ribes hesperium** McClatchie, Erythea, **2**: 79. 1894.

Shrub 5-10 feet high with spreading branches; stems smooth, beset with dark colored spines which are commonly single, but occasionally double or triple; leaves, inflorescence and young branches puberulent; leaves thin, ½-1¾ in. broad, 3-5-lobed, the lobes incised; peduncles 1-2-flowered, 2-3 lines long; pedicels about 3 lines long; bracts broad, fan-shaped with ciliated membranous pinkish margin; flowers about three-eights in. long; calyx-tube campanulate, slightly inflated, about 1 line long; segments from greenish-white to greenish-red, 3-4 lines long; petals white tinged with red, about half the length of the

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sepals, cuneate-oblong, 2- or 3-toothed, slightly involute; filaments about half longer than the petals; anthers ovate-oblong, mucronate, greenish; ovary densely echinate, bristles greenish-red, mature berry very prickly, ½-¾ in. in diameter.—Common in shaded canons of San Gabriel Mountains, flowering in January and February; fruit ripe in June and July. Collected at various times during 1893 and winter of '94. Fruit edible and of agreeable flavor.

36. **Ribes amarum** McClatchie, Eryrhea, **2**: 79. 1894.

Shrub 3-8 ft. high, rigid stems and branches beset with yellowish-brown (commonly triple) spines, often setose-hispid; leaves, inflorescence and young branches glandular, pubescent and bitterish fragrant; leaves thin, ½-1½ in. broad, 3-5-lobed and incised; peduncles 1- or 2-flowered, 3-5 lines long; pedicels each with a round-ovate 2-4- (usually 3-) lobed bract, about 3 lines long; flowers ¾ in. long; calyx-tube oblong-campanulate, 3 lines long, segments purplish-red, reflexed, 4 lines long, tips greenish, especially on back; petals pinkish-white, red-streaked near base on inside, 2 lines long, strongly involute, suborbicular when flattened out, rounded and erose-toothed at summit; pinkish filaments equalling or slightly exceeding the petals; anthers sagittate, ovate-oblong, mucronate, purplish; ovary densely glandular hairy; mature berry ½-¾ in. in diameter, densely covered with glandular bristles which produce a very bitter secretion; pulp sweet.—Quite common in shaded canons of San Gabriel Mountains. Collected at various dates during 1893 and winter of '94; flowering in February and March; fruiting from May to August.

37. **Ribes velutinum** Greene, Bull. Cal. Acad. **1**: 83. 1885.

Without prickles, the stout thorns solitary: glandless but minutely soft-pubescent: leaves small, on petioles shorter than the lamina, deeply 4-cleft; the lobes 3-cleft: peduncles short, deflexed, having about 2 white or pinkish flowers: calyx cylin-

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draceous, 2-3 lines long, the tube shorter than the erect lobes: ovary white-villous: berry dark purple, velvety-pubescent but not glandular.—*R. leptanthum* var. *brachyanthum*, Gray, Bot. Cal. I. 205.

Open grounds in the northern part of California and regions adjacent. A stout shrub, 4-6 feet high with coarse, rigid, but gracefully recurved branches. It differs from *R. leptanthum* not only in its shorter flowers, but in the velvety pubescence which clothes not only both sides of the leaf, but more markedly the fruit, even in its maturity.

Professor Greene evidently erred in considering this species identical with Gray's plant. It has also been reported from Nevada in the vicinity of Carson.

38. **Ribes divaricatum** Dougl. Trans. Hort. Soc. **7**: 515. 1830.

Ramis divaricatis setosis, aculeis 1-3 axillaribus deflexis, foliis subrotundis 3 lobis inciso, dentatis nervosis glabris, pedunculis 3 floris nutantibus, calyce campanulato: laciniis linearibus reflexis tubo duplo longioribus, stylo staminibusque exsertis, baccis glabris.

A robust bush, of erect habit, six or eight feet high, with divaricated branches, the younger ones sparingly and unequally clothed with minute, bristle shaped prickles, and having one or three large, strong, deflexed prickles under each bud. The leaves are rounded, three lobed, coarsely cut, toothed, smooth and veiny, about an inch long; the footstalks somewhat shorter, with a few scattered hairs near their base. The clusters droop below the branches, are three or five flowered, shorter than the leaves, slender and smooth, with rounded subamplexicaul bracteae. The calyx is bell shaped, yellowish green with linear brownish red, reflected segments, which are double the length of the tube. Petals wedge-shaped, white, half the length of the limb. The stamens are exserted beyond the calyx, half an inch long. Style considerably longer than the stamens, semi-bifid, spreading, villous. Berry spherical, smooth, one-third of an inch in diameter, black, pleasant to the taste.

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A common bush on the banks of streams near Indian villages, on the North West coast of America, from the forty-fifth to the fifty second degree N. Lat.

Our Californian shrub, at least the one from the southern part of the State, may be distinct. *R. villosum* Nutt., originally from Santa Barbara, is said to be the same as *R. divaricatum*, and if it really is, holds a unique position geographically, for no other species of this genus inhabiting the coast region has such an extended distribution, occurring from Santa Barbara northward into Oregon and Washington. There are no specimens from Santa Barbara in my own collection or in the herbarium of the California Academy of Sciences. Nuttall obtained his type at "St. Barbara, California; common near the village on the plain."

39. **Ribes saxosum** Hook. Fl. Bor. Am. **1**: 231. 1833.

Caule inerme rarius aculeato, spinis nullis vel solitariis binisve, foliis cordatis 5-lobis serratis glabriusculis, pedunculis brevissimis deflexis 1-2 floris, calycis glabri tubo campanulato, laciniis patentibus demum reflexis corolla duplo longioribus stamina subaequantibus, germine nudo.

Common on the undulating grounds of the interior among stones (N. W. Amer.) *Douglas.* Lake Huron, *Dr. Todd.* Saskatchewan, *Dr. Richardson*, *Mr. Drummond.* This has the same short peduncles as R. oxyacanthoides but a very different and more campanulate calyx; in the latter respect coming near R. Cynosbati. It is probably not uncommon in North America, and may have been confounded with some already described species, or it may itself belong to the following species [*hirtellum*] of this group, which seems to be scarcely known except to Michaux, and on account of the vagueness of his character, not to be determined, except by reference to his herbarium, if indeed it exists there. I have received it from Dr. Boott, gathered near Boston, under the name of R. triflorum, and hence, as well as from Dr. Bigelow's description, I suspect it to be the plant of the Florula Bostonensis, where the fruit is described as resembling a common Gooseberry.

This is supposedly the plant called *R. oxyacanthoides*, so far as the western form is concerned. It is subalpine in the Sierras, occurring from Mariposa

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to Sierra county. Hooker probably confused several species, but his type is the plant collected by Douglas.

40. **Ribes lasianthum** Greene, Pittonia, **3**: 22. 1896.

Stout, low, widely spreading and intricately branched, the height seldom exceeding 2 feet: branches glabrous; infrastipular spines commonly 3, rather slender, straight: rounded leaves ½ to ¾ inch broad, short petioled, pubescent, cleft to the middle into 3 terminal lobes, with 2 to 4 more shallow and less distinct lateral or basal ones, all these 3-lobed at apex, the sinuses closed: flowers 3 or 4, in very short-peduncled racemes, yellow; calyx about 5 lines long, the hirsute tube much dilated above the ovary, thence tapering gradually to the spreading spatulate lobes; petals also spatulate, shorter than the calyx-lobes; young ovaries hairy: fruit unknown.

An almost alpine species, flowering in the latter part of July, near the receding snow-drifts in the mountains of California above Donner Lake, toward Castle Peak. Somewhat related to *R. leptanthum* of the Rocky Mountains, though also akin to *R. quercetorum* of the Californian Coast range southward.

From specimens gathered by me last year at the type locality, several characters may be added to the description of the flower. The calyx is hirsute outside throughout about 8mm. long, the tube 5mm., the oblong lobes nearly 2mm. wide: petals and stamens inserted at the junction point of tube and lobes, the petals oblong-spatulate, white with pinkish or yellowish base 2mm. long, equalling the stamens, which are included instead of exserted, as stated in the key, the filaments broadly subulate, anthers nearly quadrate, about 1mm. wide: style not extending beyond the petals and stamens, the stout stigma two lobed.

41. **Ribes Congdoni** sp. nov.

A straggling shrub, the secondary branches apparently at right angles to the main ones: bark grayish, somewhat flaky on the old branches, the more recent growths usually prickly and pubescent: infrastipular spines usually single, pale brown or yellowish, obout 5mm. long, slender from a slightly enlarged base, straight, sharp and needle-like: leaves ovate-orbicular in

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outline, 12mm. across, truncate at base, deeply five lobed, the divisions cuneate, incised, pubescent on both sides with short hairs; petioles filiform, about 1cm. long, pubescent as the blades, but the hairs longer and whiter: peduncles about 1cm. long, filiform, pubescent like the petioles and with some short stalked glands in addition; bearing at the summit a roundish bract of over 1mm: flowers yellow, one or two, on pedicels .1 to 2mm. long, each subtended by a bract similar to the one terminating the peduncle, white pubescent outside and along the inner edge of the calyx lobes: calyx about 8mm. long, the nearly cylindrical tube 4mm. long, 2mm wide, equalled by the oblong obtuse lobes 1mm. wide: petals yellow, broadly spatulate, a little over 2mm. long, 1mm. wide above, obtuse, included 1mm. within the expanded calyx: stamens a little shorter than the petals, thus about 2mm. long, the stout filaments narrowed above; anthers ovate, obtuse, with slightly cordate base, about 1mm. long, thus nearly equalling the filaments: style very short, 3mm. long, included within the calyx tube, glabrous, two lobed, the lobes rather slender and spreading: ovary glabrous.

The type was collected on dry stony hillsides below Mormon Bar, Mariposa county, California, March 10, 1903, by Mr. J. W. Congdon, and distributed as *Ribes leptanthum*, a species which hardly reaches California, at least not the western slope of the Sierra. *R. Congdoni* forms a connecting link between *R. quercetorum* of the southern Coast Range and *R. lasianthum* of the northern Sierras, perhaps more related in general appearance to the former, which, however, is a smooth plant.

The term "stamens exserted" in the part of the key relating to this species should be corrected to "stamens included." The misleading term was adopted from a flower with reflexed calyx lobes, in which case the stamens would naturally appear exserted.

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42. **Ribes quercetorum** Greene, Bull. Cal. Acad. **1:** 83. 1885.

Prickles none; thorns stout, solitary: glabrous or very minutely puberulent, glandless: leaves small, numerous, 5-cleft, the lobes narrow, cuneiform, 3-cleft or -toothed, a half inch long on petioles of an inch or less: peduncles slender, deflexed, with two or more small, bright yellow flowers: calyx tubular, minutely puberulent, the lobes linear-oblong, lightly ciliate, a little longer than the petals, reflexed: stamens shorter than the petals; anthers short-oblong: style glabrous, undivided; stigmas two; ovary glabrous: berry small, smooth.

Bushes 3 or 4 feet high, in dense, well rounded clumps, growing in oak groves at the base of the mountains in Monterey and San Luis Obispo counties; especially abundant at El Paso de Robles, where it was collected by the writer in March, 1884. The species is near *R. leptanthum;* the very small yellow flowers are very fragrant. Ripe fruit has not been seen.

43. **Ribes speciosum** Pursh, Fl. Am. Sept. **2:** 731. 1814.
Ribes stamineum Smith, Rees Cycl. **30:** 1819.
Ribes fuchsioides Berl. Mem. Soc. Genev. **3:** Part *2. pl. 3.* 1828.
Robsonia speciosa Spach. Phaner. **6:** 181. 1838.

R. sub gemnis 3-plicato-aculeatum: foliis cuneato-subrotundis inciso-crenatis glabris nervosis subtus pallidioribus, petiolis brevibus, pedunculis sub-3-floris foliis longioribus, pedicellis germinibusque glanduloso-pilosis, calycibus tubulatis pedicellis longioribus, staminibus longissime exertis.

On the north-west coast. *Menzies. v. s. in Herb. Bauks.* The younger branches are hispid; the flowers large, purple. The leaves are small, and have some resemblance to those of *Thalictrum.*

There is considerable reason for separating this species as a distinct genus, possessing as it does a 4-merous flower, erect calyx lobes and evergreen leaves, characters all at variance with our other gooseberries. Pursh's habitat of "on

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the north-west coast is rather vague, but Smith, under his description of *R. stamineum* says it was "gathered by Mr. Menzies in California." It was undoubtedly collected at Monterey, where it is abundant on hillsides, and is not known to occur north of that place, but ranges southward from there to Lower California.

Those who are inclined to criticise should bear in mind that this is not a monograph of the members of the genus *Ribes* in California. It is merely the bringing together in compact form the work of others, and no claim is made as to the completeness of the work; the writer is even now fully convinced that his own limited collection still contains at least two undescribed species, but did not come to this conclusion until too late to include them in their proper place. The paper has indeed quite outgrown its original limits, for the intention was merely to print an annotated list of the known species with a key, the key being the main object of the undertaking. Many large genera are almost totally confined to the Rocky mountains and regions westward, and the number of species is being added to continually, usually with no attempt at corellation and sometimes with no hint as to the relationship of the newly described species. As this vast region, with the exception of several local floras, has never been fully covered in recent years, there is much to embarass the worker within its limits. Of the floras, local and otherwise which more or less cover this region, there is but a single lone example of the use of a modern key throughout, and that is in Jepson's Flora of Middle Western California. Abram's recently issued Flora of Los Angeles and Vicinity, is a distinct disappointment in that respect, for instead of keys which definitely place each species, one must laboriously read over the descriptions of a number of species in the larger genera in order to place some particular species.

It is to be hoped that more revisions of genera with modern keys will appear in the near future, or if the time is not ripe for revisions, at least keys to known species. The writer hopes to do some small part of this necessary work, and the present paper is the first of the series.

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WESTERN SPECIES, NEW AND OLD.—III.

Juncoides subcongestum (S. Wats.) Coville

Luzula spadicea var. *subcongesta* S. Wats. Bot. Cal. **2**: 202. 1880.

My No. 7135, from above Donner Pass, in Placer county, California, collected August 10, 1903, has been identified as above, and is from type locality. Mr. Coville, to whom it was sent for identification, says it must be named *Juncoides subcongestum*, being held distinct from *parviflorum* on account of the conspicuous fimbriation of its bracts and bractlets. The plant is a handsome one, and grows in clumps in little grassy meadows among granite rocks kept moist by slowly melting snow-banks. The elevation is about 7500 feet.

Heuchera lithophila

Stems usually many from a thick, multicipital lignescent rootstock, 2-3dm. high, often purplish, naked or occasionally bearing one or two small leaves below the inflorescence, scantily pubescent below, glandular and puberulent above: leaves basal, broadly ovate, either truncate or somewhat cordate at base on petioles of 7cm., glabrous or nearly so on both sides, 5 lobed, the lobes rounded and short, these again slightly 3 lobed, each secondary division ending in a minute cusp, margins ciliate: panicles lax, the lower 1-2dm long, branches usually trichotomous on slender peduncles of 2-3cm.: bractlets subtending the peduncles and pedicels linear-acuminate, 2-4mm. long, fimbriate, purplish: pedicels a little shorter than the calyx, which is 4mm. long, slender campanulate, purplish, pubescent and glandular, the short lobes of 1mm. usually rounded, greenish tipped: petals white, linear-spatulate, exserted about 3mm. beyond the calyx, as are the stamens and styles.

No. 7028, collected on granite rocks near Donner Pass, Nevada county, California, July 27, 1903. It is abundant in

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moist shaded places on the rocks, usually growing in large tufts, which are conspicuous for some distance. It passes in California for *H. rubescens*, but seems to differ from that species as described and figured in Stansbury's Report, 388. *pl.* 5. in the longer and narrower calyx and shorter and broader calyx lobes. Nor does it seem to be *H. rubescens* var. *glandulosa* Kellogg, the type of which came from the Donner Pass region, but at a much greater elevation, over 9000 feet. *H. lithophila* was noted at from 6500 to 7500 feet, but it perhaps has a greater altitudinal range.

Rubacer velutinum (H. & A.)

Rubus velutinus H. & A. Bot. Beech. 140. 1840.

Rubus Nutkanus var. *velutinus* Brewer, Bot. Cal. **1**: 172. 1876.

Rubus parviflorus var. *velutinus* Greene, Bull. Torr. Club, **17**: 14. 1890.

Dr. Rydberg has recently well segregated these plants so different from typical *Rubus*, giving to them the name *Rubacer*. Our Californian plant of the coast region is certainly as well worthy of specific rank, if not more so than is *R. parviflorum*, which differs principally from the original species in the white color of its flowers. *R. velutinum* differs from the other species in its thicker, densely velvety pubescent, evenly serrate leaf, and dry, insipid fruit. These differences are not due merely to exposed and unfavorable conditions of growth, as might be supposed, for they hold under normal conditions, namely, in deep shaded ravines along permanent streams, with a northerly exposure. It is not uncommon near Los Gatos in the foothills of the Santa Cruz mountains, growing under the conditions just described.

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Rosa ultramontana (S. Wats.)

Rosa Californica var. *ultramontana* S. Wats. Bot. Cal. **1:** 187. 1876.

This was originally described as "tomentose but not glandular: calyx-tube and pedicels glabrous: prickles straight and slender. . . On the eastern side of the Sierra Nevada, ranging to the Rocky Mountains."

Whether the form occurring in the Rocky mountains is identical with the plant of the eastern slope of the Sierras, I do not know, but *R. ultramontana*, as observed by me last year about Donner Lake and along the Truckee river, is certainly distinct from *R. Californica*, and all the characters given by Watson show that it is quite distinct. The original description of *R. Californica* in Linnaea, **2:** 35. 1827, is as follows:

Rosa quam e San Francisco retulimus, Californica, speciem novam esse suspicamur specimina vero multa desideranda relinquunt. Rami glabri, aculeis stipularibus geminis, cetera uti tota planta inermis. Aculei stipulares rectiusculi, subrecurvi, patentes. Foiia trijuga, superiora bijuga; foliola ovata, obtusa, argute serrata, impar maximum circiter 9 lin. longum, inferiora minora; subtus cum stipulis petiolisque inermibus tomentosa, supra pubescentia, omnino sicut tota planta eglandula, exceptis glandulis raris sessilibus in margine stipularum. Flores in apice ramorum subcorymboso-racemosi, 4-6; pedunculus pilis patulis hirtus, in infera parte foliolo ovato, integerrimo, sessili, amplectente (e stipulis folio deficiente transformatis enato) instructus. Germen ovoideum glabrum. Laciniae calycinae ovatae longe acuminatae, acumine apice dilatato spathulato, extus pubescentes, intus tomentosae, et tomento albo in margine densiori ciliatae, albo-marginatae. Petala rosea. Flores magnitudine circiter R. pimpinellifoliae.

Sidalcea hydrophila

Perennial, from a thick ascending rootstock: stems tall, erect, 6-8dm. high, slightly pubescent below with stellate or

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forked hairs, sometimes purplish throughout: leaves light green, mostly on the middle part of the stem, the lower on long, slender petioles of 2dm., orbicular in outline, 5-6cm. in diameter, usually 6 lobed, the divisions oblong or quadrate, these again divided into 3-5 segments which are either rounded or acute and apiculate; uppermost but scarcely smaller ones cut into more slender, sometimes entire divisions, on petioles of their own length, all pubescent on both sides with short, soft forked hairs, veins prominent, sinus deep, acute; stipules lance-acuminate, 5mm. long: inflorescence branched, the slender branches naked or with some bracts, 1-2dm. long; racemes spicate, dense, often 5 or 6cm. long: calyx 5mm. high, cup-shaped when in flower, pubescent with short appressed hairs, these more often simple than forked, the ovate-lanceolate apiculate lobes 3mm. long: petals deep rose-purple, oblong with a slightly cuneate base, 12mm. long, 4 or 5mm. wide, notched: akenes 3mm. long, smooth and glabrous: greenish or straw-colored, slightly curved.

No. 6047, collected August 11, 1902, near Hullville, Lake county, California, on the ridge between Eel river and Rice creek, in a swampy place. It is related to *S. Oregana.*

Eriodictyon trichocalyx

Shrub, height unknown: bark of the previous year brown, puberulent, as is the pale growth of the season, and as well as the leaves shining with a gummy exudation: leaves oblong, the largest 9cm. long including the petiole of 1cm. or less, averaging 1cm. wide, sinuate-dentate, the apex rounded or acutish, the base gradually narrowed into the petiole, deep green and glabrous above, veins prominent beneath, especially the midvein, the spaces between the veins whitened with a very short and close tomentum which is barely perceptible to the touch: inflorescence pubescent with short hairs which completely cover the short, 3mm. long calyx, the lobes of which are linear: corollas narrowly campanulate, 6mm. long, 4mm. wide across the summit, probably purplish, densely pubescent on the outside, the

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rounded lobes slightly over 1mm. long and about as wide: stamens equalling the corolla tube, the anthers inserted at the base of the corolla, but adnate for one-third their length, the adnate portion bearded, but not densely so: styles equalling the filaments.

The type was collected by Mr. Geo. B. Grant at Seven Oaks Camp, San Bernardino mountains, San Bernardino county, California, June, 1901, and was distributed as *Eriodictyon Californicum.* It resembles that species somewhat in its leaves, but otherwise is totally different, being probably more nearly related to *E. angustifolium.*

Orthocarpus exsertus

Branched from near the base, 3dm. high, the branches erect or ascending, brownish, pubescent with straight, rather chaffy hairs, which are scattered below, more plentiful above: leaves few, 2cm. or less in length, three or five lobed, these narrowly linear, 1mm. wide, appearing almost capillary in the dried state: inflorescence occupying nearly the entire upper half of the stem in fully developed plants, lax below, crowded above: floral bracts shorter or no longer than the calyx, differing little from the leaves, except that they have a much broader, entire middle division, only the tips purplish; the bracts and the leaves pubescent like the stem: calyx almost 2cm. long, the slender tips purplish, pubescent with soft, wavy hairs: corollas apparently bright rose-purple, about 3cm. long, the tube twice the length of the lips; lower lip abruptly dilated, 5mm. or more across, slightly pubescent, each of the three divisions dotted above with a darker spot; upper lip extending 4mm. above the lower, densely bearded on the back, the apex slightly hooked.

The type is a specimen in my possession collected by Mr. Geo. B. Grant at Lincoln Park, near Pasadena, Los Angeles county, California, April, 1902, No. 886, and grows in "grassy sunny places." It was distributed as *Orthocarpus purpurascens*, and is nearest to that species as we understand it, but dif-

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fers in pubescence, in the leaves, and especially in the naked, exserted state of the flowers. The corolla also probably differs in shape.

Mimulus grandis (Greene)

Mimulus guttatus var. *grandis* Greene, Manual, 277. 1894.

This remarkably large and handsome plant is certainly distinct from the Alaskan plant with which it has been associated. Since it was originally well characterized by Professor Greene, there is no need of a description in this place. Up to this season I had found it only near the sea about San Francisco and Pacific Grove, in moist places, usually in almost pure sand, but last May it was collected on the far side of the ridge east of San Jose, in a field along the Mt. Hamilton road, growing in black mud below a watering trough.

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Volume 1. No. 6

MUHLENBERGIA

A. A. HELLER, Editor

LOS GATOS, CALIFORNIA, MARCH 13, 1905

[All unsigned articles in this journal are by the Editor, and the types of all new species described by him are deposited in his private herbarium, unless otherwise stated.]

WESTERN SPECIES, NEW AND OLD.—IV.

Ribes Greeneianum

A shrub 3.3.5 m. high, probably spreading: bark brownish-gray, apparently not flaky, glabrous: prickles if present soon deciduous: infrastipular spines seemingly single, and only occasionally present, colored like the bark, slender and needle-like, about 8 mm. long: leaves rather firm, broadly ovate or orbicular in outline, the largest 3 cm. in diameter, three lobed, the lobes unevenly and coarsely crenate, the base markedly cordate, dull green above, paler beneath, both sides glandular, and pubescent with short hairs, veins rather prominent beneath; petioles slender, only slightly or not at all dilated at base, less than 1 mm. in diameter, about two-thirds the length of the blade, densely pubescent with hairs somewhat longer and more spreading than those on the blade, and beset with stalked glands: flowers single or in pairs, the slender peduncles glandular and pubescent like the petioles, slightly drooping, at least when old; pedicels short, 3-4 mm. long subtended by a rounded, dentate or fringed densely glandular bract of less than half their length: calyx whitish or creamy, about 1 cm. long, the tube only 3 mm. long, glandular

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and pubescent; segments lance-oblong, acutish, a little over 2 mm. wide, veined, somewhat pubescent: petals white, about 4 mm. long, or a little more than half the length of the calyx segments, strongly involute, 2 mm. wide when spread out, the end truncate: filaments equalling or slightly exceeding the calyx, flattened and 1 mm. wide at base, tapering to half that thickness at the apex, glabrous; anthers lanceolate, 2 mm. long the apex blunt: style exserted 1 or 2 mm. beyond the stamens, 2-cleft and darkened to about the meeting point with the stamens; stigmas capitate: immature fruit inclined to the oval in outline, probably yellowish, densely armed with weak, glandular bristles.

The type, in my herbarium, is C. F. Baker's 2915, collected May 6, 1903, at Vacaville, Solano county, California, said to be "frequent in shady bottoms." It was determined by Professor Greene as "*Ribes Victoris* Greene," and distributed as such by Mr. Baker. A comparison with the original description as well as with typical specimens of *R. Victoris* shows that this plant is abundantly distinct. It differs considerably in general appearance, and the flower characters are unlike. The type specimen shows only a very slight development of new growth, the most of the branches giving evidence of but one or two millimeters growth during a season.

The flower character at least, of the *R. Victoris* of Jepson's Flora of Middle Western California, is apparently drawn from specimens of *R. Greenei anum*.

Lupinus Bridgesii (S. Wats.)

1905.

Lupinus albicaulis var. *Bridgesii* S. Wats. Proc. Am. Acad. 8: 527. 1873.

Lupinus formosus var. *Bridgesii* Greene, Fl. Fran. 42. 1891.

"The more villous form, with largest flowers and densest racemes.—Near San Francisco." [Bridges, No. 64, 64a.]—Watson, l. c.

"Stipules narrowly lanceolate, the whole plant silvery-

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canescent and even villous: raceme distinctly pedunculate, the verticils more remote and distinct."—Greene, l. c.

The above significant record is one of many which confronts the student in systematic botany. This particular form, named thirty-two years ago, is still unrecognizable, so far as description goes, but numerous named specimens appear to point to a certain somewhat variable form not uncommon in the region of San Francisco Bay. That this form is distinct from the northern *L. albicaulis* is also pretty certain. Not having access to the type itself, I append the following description, drawn from my No. 5598, collected May 23, 1902, in low grassy fields near Cordelia, Solano county, California:

Perennial: stems several from a thick, woody rootstock, erect or ascending, 5-6 dm. high, slightly channeled or ridged, villous with soft white ascending or spreading hairs, especially on the lower half, those on the upper part shorter and more appressed, leafy and somewhat branched, the branches short and probably not maturing flowers: petioles variable in length, but usually from one-third to one-half longer than the leaflets; these oblanceolate, acute or acutish, slightly mucronate, the largest about 4 cm. long, 1 cm. wide, densely silky on both sides with appressed hairs, midvein rather prominent beneath, and brownish in the dried plant; stipules linear-lanceolate, acuminate, 1-1.5 cm. long, 1 mm. or a little more in width: naked or pedunculate part of raceme about 5 cm. long, the flower bearing part about 2 dm.: flowers violet-purple, rather distinctly verticillate, mature internodes about 2 cm long: pedicels 5 mm. long, densely pubescent with short spreading hairs: calyx 8 or 9 mm. long, densely silky with appressed hairs, the lobes nearly equal, oblong, 2 mm. or a little more in width, the lower standing almost horizontally, and not closely pressed against the keel, entire, shortly pointed; the upper ascending, two-toothed, concealed behind the wings: corollas about 12 mm. long and as broad, banner a little shorter than the wings, and darker in color; keel glabrous, strongly curved, the part below the "elbow" propor-

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tionately very broad and partly protruding from the wings, the purplish apex included.

This description is still deficient, for lupine flowers in the dried state do not show the various excellent characters which are apparent in the living state.

Lupinus Watsoni

Lupinus aridus var. *Utahensis* S. Wats. Proc. Am. Acad. **8**: 534. 1873; not *L. holosericeus* var. *Utahensis* S. Wats. l. c. 533.

"Racemes 3-6 inches long, shorter than the very long petioled leaves; bracts setaceous, exceeding the flowers; petals purplish, 4 lines long, the banner shorter.—Parley's Park in the Wahsatch (Watson)."

The above description, short and unsatisfactory as it is, as well as the different geographical range, points to a plant distinct from the northwestern *L. aridus*.

Trifolium Andrewsii (A. Gray)

Trifolium barbigerum var. *Andrewsii* A. Gray, Proc. Am. Acad. **7**: 335. 1867.

Trifolium Grayi Loja. Nuovo Giorn. Bot. **15**: 189. 1883.

If these two names belong to the same plant, Gray's should be adopted, as it is much older, and is apparently the only *Andrewsii* in the genus.

Trifolium parvum (Kellogg)

Trifolium pauciflorum (?) var. *parvum* Kellogg, Proc. Cal. Acad. **5**: 54. 1873.

Trifolium multicaule Jones, Bull. Torr. Club, **9**: 31. 1882.

Both these names have been credited to *T. monanthum* as synonyms, the former by Watson, who in the Bibliographical Index perverts its meaning by placing the question mark thus —"var. (*?*) *parvum*," instead of "*pauciflorum* (?) var. *parvum*," as originally written by Kellogg; and the latter by Greene. That Kellogg's plant, collected at Cisco, and Jones' from near

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Summit, both places in Placer county California, and only a few miles apart, are identical, I have no doubt, and am still more positive that they do not belong to *T. monanthum* if the original descriptions mean anything. My No. 6942, distributed as "*Trifolium geminiflorum* Greene," should be corrected to read *Trifolium parvum*. It was obtained on the shores of Donner Lake, only a short distance from Summit, but 1000 feet lower, or at about the same elevation as Cisco. Dr. Kellogg gave a very good and lengthy description of his plant, as he usually did, but I shall not reproduce it here, as I am doing that elsewhere.

Trifolium splendens

Annual, growing in rosette-like tufts, composed of several plants, the whole cluster rarely rising more than 1 dm. above the ground, glabrous throughout: stems several to many from the root, and again branching above, 1-2 dm. long, the outer longer ones prostrate, the inner more ascending, rather slender, purplish below, green or yellowish-green above: leaflets light green, the lowest cuneate, retuse, very small, 2-3 mm. across, the larger uppermost ones obovate-cuneate or sometimes inclined to the elliptical, commonly rounded at the apex, 1.5 cm. long, 1 cm. wide, all spinulose dentate at the ends of the prominent anastomosing veinlets; petioles all longer than the leaflets, those of the middle part of the stem thrice longer, those of the lower and upper part usually about twice longer; stipules rounded, clasping the stem, about 5 mm. in diameter and 7 mm. high, the lower adnate portion scarious, the upper more elongated part green and irregularly lacerate with weak-spinulose teeth: heads large, 2 cm. across, 1.5 cm. high, solitary, terminating the branches on peduncles of 4-5 cm: involucre comparatively small, 3-4 mm. high, irregularly laciniate toothed, the teeth weak-spinulose: calyx about 6 mm. long, glabrous, the pale tube about 20 striate, 2 mm. or slightly more in length, the purple tipped lobes about 4 mm. long, 1 mm. wide below, prolonged into an

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acuminate and aristate point, with a tooth on either side, or sometimes only one tooth present, or both absent from the inner calyces, strongly five-veined, one of these along each margin, and two branching from the midvein in the upper half: flowers numerous, of a rich purple below, white above, twice the length of the calyx; banner obovate-oblong, nearly 3 mm. wide across the rounded and notched apex, strongly concave on the ventral side, and slightly curved back at the apex, the dorsal side showing a sharp ridge; wings elliptical-ovate, a little more than 1 mm. wide, acutish, standing slightly away from the keel; keel about 1 mm. wide at the enlarged, somewhat hood-shaped end, which is tipped by a slender slightly downcurved apiculation about 1 mm. long.

My No. 6691, first collected May 7, 1903, in moist grassy places in sandy pine woods at Pacific Grove, Monterey county, California, but its time of greatest profusion was about two weeks later. It is one of the most beautiful clovers, and apparently local, as it has been seen at no other place. It is a relative of *T. variegatum*, or what passes for that species in California, and the two often occur in close proximity, but could never be confused.

It may be remarked in this connection that the flowers of *Trifolium* are seldom described, except in the most superficial way. Indeed, Lojacono's paper in Nuovo Giorn. Bot. **15**: 1883, and Miss Eastwood's description of *T. tenerum* in Bull. Torr. Club, **29**: 81. 1902, are about the only really good examples known to me.

Stachys ramosa

Perennial, young plants simple or almost so, in age becoming divaricately branched, often becoming 6-8 dm. high, the lower branches commonly equalling the height of the plant, the others becoming successively shorter, thus making the plant somewhat pyramidal in outline, all stout, quadrate, 5 mm. across, markedly pubescent with rather soft straggly hairs, some of which are forked, the angles marked by a prominent rounded

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line: leaves ovate-oblong, the largest lower ones about 1 dm. long, 5 cm. wide below, 2 cm. wide across the rounded top, thickish but not firm, rather coarsely crenate, veins prominent on both sides, the base rounded or truncate, somewhat oblique; petioles stout, 2 cm. long, 4 mm. wide, channeled above, strongly ribbed below by the pale midrib, the base slightly connate-clasping, pubescent like the stems, the upper ones gradually becoming shorter, the uppermost obsolete or nearly so: inflorescence 1-2 dm. long, the lower internodes 3-4 cm. long, the others successively shorter: whorls normally six flowered: calyx 5 mm. long, narrow below, campanulate above, where it is 4 mm. across, the triangular, acute lobes 1 mm. or a little more in length, each armed with a prominent slender innocuous cusp, the whole densely soft pubescent, including the inner face of the lobes: corollas 1 cm. long, the tube exserted 2 mm. beyond the calyx, prominently spurred on the lower side, densely bearded at the middle on the inside with a horizontal ring of hairs; lower lip nearly white externally, the inside marked with short purple lines, large, 6 mm. long and as wide across the lateral lobes which droop slightly, the rounded terminal lobe about 5 mm. wide, 3 mm. long, rounded and slightly upcurved at the end, otherwise nearly plane; bearded near the middle on the outside, merely puberulent in the throat; upper lip erect, strongly arched above the stamens, 4 mm. long, 3 mm. wide at the top, a little narrower below, purplish and pubescent outside as well as somewhat glandular near the apex: filaments lined with purple; anthers brownish. Described from the living plant.

No. 7510, collected June 15, 1904, in moist places in a field on Fairview ridge immediately west of Los Gatos, Santa Clara county, California. Also observed in bloom as late as the middle of October. The plants are stout and large when mature, light green, with the marked and not unpleasant odor of *S. ajugoides*, to which it is related. The pubescence, which occurs on both stem and leaves, though white and rather plentiful, does not obscure the green appearance of the plant.

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Artemisia monocephala (A. Gray)

Artemisia scopulorum var. ***monocephala*** A. Gray, Proc. Acad. Phila. **1863**: 66. 1864.

Artemisia Pattersoni A. Gray, Syn. Fl. **1**: Part 2. 435. 1878.

The older name for this plant must be adopted, as it does not appear to have been used previously in the genus.

Senecio majus (A. Gray)

Senecio eurycephalus var. ***major*** A. Gray, Pac. R. Rep. **4**: 111. 1857.

Senecio Whippleanus A. Gray, Proc. Am. Acad. **19**: 54. 1883.

The same remark applies to this species as well as to the one above.

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Volume 1 No. 7

MUHLENBERGIA

A. A. HELLER, Editor

LOS GATOS, CALIFORNIA, NOVEMBER 6, 1905

[All unsigned articles in this journal are by the Editor, and the types of all new species described by him are deposited in his private herbarium, unless otherwise stated.]

THE WESTERN VERATRUMS

In 1898 while working over his collection of plants from western Washington, the writer not only discovered an excellent new species in this genus—*V. caudatum*—but found a great admixture of forms under the name *Veratrum Californicum*. The following year he had an opportunity to examine pretty thoroughly the collections of Columbia University and the New York Botanical Garden, and later had submitted to him the material in the U. S. National Herbarium. He came to the conclusion that either several new species had to be admitted, or a very elastic description drawn up to fit *V. Californicum*, and decided that only intimate acquaintance with the plants in the field could form a basis for determining the matter. Having observed plenty of true *Californicum* in the field during the past four seasons, he now feels qualified to do a little preliminary work on the genus. Having undertaken the task, he would like to have the co-operation of botanists in the West. Good photographs of the plants as they occur in their accustomed habitat are invaluable, as well as properly prepared specimens. Mere scraps of a plant (and such only one often finds in

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collections) are always unsatisfactory. It needs be a large plant indeed which cannot be made into a specimen showing the whole inflorescence and some of the upper leaves by bending it once or twice. Then one of the lower leaves, and one too from the middle part of the stem should be shown. Several individual flowers should be taken off and pressed flat under plenty of pressure; and a small branch may be treated in the same way.

Unless we can have work carried on somewhat as outlined above, an intelligent understanding of the genus is hardly possible. The following preliminary sketch is offered as a beginning:

Capsule oblong-ovate, acute, many seeded	
Perianth segments serrulate or entire	
Flowers greenish, bractlets foliaceous, equalling or exceeding the flowers	V. Eschscholtzianum
Flowers whitish or creamy; bractlets shorter than the flowers	
Segments broad	
Long, 1 cm. or more	
Mostly acute, with a green V-shaped mark at base	V. Californicum
Mostly obtuse, not marked at base	V. speciosum
Short, 5 mm. long	
Obtuse, dark lined at base, but the lines not confluent	V. Jonesii
Segments narrow	
2-3 mm. wide; main stem much elongated	V. caudatum
1 mm wide; stem not much elongated	V. tenuipetalum
Capsule obovate, obtuse, few seeded	
Segments fimbriate	V. fimbriatum

VERATRUM ESCHSCHOLTZIANUM (R. & S.) Rydb. Bull. Torr. Club, 27: 531. 1900.

Veratrum lobelianum var. *Eschscholtzianum* R. & S. Syst. 7: 1555. 1829.

Veratrum Eschscholtzii A. Gray, Ann. Lyc. N. Y. 4: 119. 1837.

In the Bulletin of the Torrey Botanical club as cited above, Dr. Rydberg apparently published the combination *Veratrum*

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Eschscholtzianum, although in a round-about way. Whether the plant of Idaho and Oregon should be included under this species is doubtful, but the Alaskan type is certainly distinct from the eastern *V. viride*. One point of difference which immediately appeals to the eye is the drooping flower branches. The following is the original description:

Ramis majis patentibus; floribus remotibus, minoribus.

In Norfolk Sound: Eschscholz.

Obs. In *beta*, quod *V. Lobelìano* simillimum, sed examine in vivis instituto tamen forte species propria: caulis 1½ ped. et ultra, inferne crassite digiti, undique pubescens. Folia inferiora ovata, superiora lanceolata, omnia acuminata, supra glabra, subtus dense pubescentia, exsiccatione nigricantia, inferiora 6 poll., 2½ poll. lata, superiora 3 poll., 9-12 lin. lata. Panicula ¾ ped.; rami laterales simplices, patentes vel subreflexi, nec erecto-patentes, ut in nostro. Racemi terminalis bracteae inferiores lanceolatae, acuminatae, flores multo superantes, 9-10 lin. latae; superiores flores aequantes vel iisdem paulo breviores, sic etiam in ramulis; omnes subtus pubescentes. Flores minus approximati, majis patentes, minores quam in nostro, exsiccatione fusci, omnes pedicellati, superiores hermaphroditi, inferiores in ramulis saepius masculi. Pedicelli densissime pubescentes, 1-1¾ lin. Petala obovato-lanceolata, acuta, margine denticulata, ungue parum angustato non incrassata, e exteriora paulo latiora et fere breviora extus pubescentia, praesertim ad dorsi basin, 4 lin vel paululo ultra, 1-1¼ lin. lata. Stam. corolla vix duplo breviora; filamenta graciliora quam in nostro; antherae peltatae, pallidiores. Styli staminibus breviores, recurvi. Ad specimen in Herb. cli. Martius. Huc videtur pertinere V. album a clo. Mertens prope Sichta lectum et in Linnaea 1829 p. 72 adductum.

VERATRUM CALIFORNICUM Durand, Journ. Phila. Acad. II. **3**: 103. 1855.

The type of this species was collected near Nevada City, Nevada county, California, by a Mr. Pratten in 1854, and since

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that time nearly every *Veratrum* collected between the Pacific ocean and the Mississippi valley has been referred to it. The original description reads as follows:

"Caulis robustus, foliosus, pubescens, foliis ovato-lanceolatis, acuminatis, plicatis, glabris, imis caulinaribus in petiolum attenuatis et cum eo circa pedalibus; superioribus sessilibus, subvaginantibus. Racemo valde pubescenti, paniculato et circiter pedali; floribus breve pedicellatis, polygamus; sepalis ovatis obovatisve, persistentibus, in sicco fuscis et purpureo ad basim maculatis, antheris reniformibus posticis, antice dehiscentibus; stylis brevibus, recurvis.

"This is undoubtedly different from *V. viride* of which I have seen specimens from Oregon, perfectly similar to our eastern plant, except that the leaves are almost round. The color and shape of petals differ entirely. *V. viride* has greenish flowers with narrow elongated petals drying green. *V. Californicum* on the contrary, like *Melanthium Virginicum*, dries purple, and has ovate sepals, marked at the base with a deep brown spot. The bracts in *V. viride* are very long and narrow, those of *V. Californicum* are scarcely longer than the short pedicel, and are oval and concave, the leaves also are quite different; they are broadly ovate in the former, and ovate-lanceolate in Mr. Pratten's plant."

In 1899 while at the New York Botanical Garden I made the following note:

"In the herbarium of Columbia University is a fragment of a flowering branch, evidently taken from the type of this species. With it is the legend: 'Fragment of a specimen from California. Recd from Mr. Durand, Dec. 1854.' The perianth segments are broadly ovate or obovate, about 7 mm. long, 4-5 mm. wide. The only specimen of late collections which I would confidently refer to this species is H. E. Brown's 579, collected on the south side of Mt. Shasta, California, July, 1897."

In 1902 I examined Durand's type in the herbarium of the Philadelphia Academy, and found that my judgment concerning

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Brown's 579 was correct, and that my own 5963 collected July 22, 1902, in Lake county, California, near the summit of Mt. Sanhedrin at about 6000 feet is good *Californicum*. In 1903 it was obtained on a high ridge just south of Donner pass, at 8000 feet, no. 7177. The Donner Lake region is not far from the type locality, part of it lying in the same county, and it is plentiful there. During the present season (1905) it was noted and carefully examined to make the identification positive, at Sisson, Siskiyou county, at the foot of Mt. Shasta, growing among grass in moist meadows, elevation 3550 feet, the lowest station recorded.

The "deep brown spot" at the base of the sepals, mentioned in the original description is green in the living plant, and extends along both edges of the claw, forming a V-shaped mark. The "purple" color of the flowers in the original is due to imperfect drying, for in nature they are creamy with a greenish tinge. The type shows only the upper part of the plant, hence the large lower leaves are not described. They are broadly elliptical, often verging upon the rotund, the largest ones 3 dm. long, 2.5 dm wide. The "imis caulinaribus in petiolum attenuatis," upon which Dr. Rydberg lays stress in Bull. Torr. Club, **27**: 532, is a false character. The lower leaves are no more petioled in this than in the other species. The supposed "petiole" is merely the long sheathing base split away from the stem, the likeness enhanced by the fact that only the upper narrow leaves are present in the type.

The plant is low, usually not much over a meter in height, several plants growing in close proximity, or often forming extensive colonies in moist gravelly flats in the higher mountains. In North American Fauna 16: 140. *f. 44*, one gets a fairly good idea of its appearance. It is rather common on the high peaks of the north Coast Range, and from at least the middle Sierra north to Mt. Shasta, but just how much further north it extends the writer is not now prepared to state; but it pretty certainly does not extend east to the Rocky mountains.

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VERATRUM SPECIOSUM Rydb. Bull. Torr. Club, **27**: 530. 1900.

In 1899 the writer came to the conclusion that Flodman's Montana specimen, since taken up by Dr. Rydberg as the type of this species, was undescribed; but he did not associate with it the other specimens enumerated by Rydberg, and as noted above, definitely placed Brown's Mt. Shasta plant under *Californicum*. Perhaps some of the other specimens cited really do belong to *V. speciosum*, but those from California certainly do not.

Veratrum Jonesii

Probably tall, the specimen very imperfect, showing only the upper flowering part of the stem 4 dm. in length: branches of the panicle many but not crowded, the lowest one 1 dm., the uppermost about 6 cm. long, the prolongation of the main stem extending about 1 dm. above the branches, all covered with soft woolly hairs: pedicels slender, maximum length about 8 mm.: outer perianth segments obovate-spatulate, 5 mm. long, 3 mm. wide across the rounded top, the inner a little narrower, standing well apart from each other at the base, prominently veined and somewhat pubescent, especially on the claw, a narrow dark line extending along either edge of the claw, but not confluent at base: stamens about 4 mm. long: immature capsules over 2 cm. long, 1 cm. across, tipped by the rather widely spreading awn-pointed stigma lobes of 2 mm.

The type is no 6584, collected by Marcus E. Jones on the Middle Fork of the Weiser river, Washington county, Idaho, August 3, 1899, altitude 4500 feet, the original label bearing the name "*Veratrum Californicum.*" Imperfect as is the specimen, it is very different from *Californicum* in its floral characters, and is apparently a larger plant.

VERATRUM CAUDATUM Heller, Bull. Torr. Club, **26**: 588. 1899.

Outside of the type collection distributed by the writer, this interesting species has not been reported. In his Flora of Northwest America, 663, Mr. Howell states that it does not dif-

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fer according to description from *V. Californicum* except "in glabrous leaves." But Mr. Howell's *Californicum* is plainly an aggregate, and perhaps the real species is unknown to him.

VERATRUM TENUIPETALUM Heller, Muhlenbergia, **1**: 39. 1904.

This well-marked species should be looked for throughout Colorado and New Mexico, and will probably prove peculiar to the southern Rocky mountains.

VERATRUM FIMBRIATUM A. Gray, Proc. Am. Acad. **7**: 391. 1868.

This, the most remarkable species in the genus, is quite local, thus far having been reported only from the type locality, along the coast of Mendocino county, near Mendocino, California, where it is said to be plentiful.

A NEW LINANTHUS

Linanthus Eastwoodae

Linanthus serrulatus Milliken, Univ. Cal. Pub. Bot. **2**: 60. 1904; not Greene, Erythea, **3**: 120. 1895.

Annual, diffuse, about 1 dm. high, the lower branches somewhat procumbent, the others diverging and ascending, often purplish, pubescent with short hairs which are inclined to be retrorse: internodes few, of varying length, the longest about 4 cm.: leaves dull green, those of the stem a pair at each internode, 2 cm. or less in length and as wide, palmately parted into about 8 linear acerose segments 1 mm. wide, sparingly armed with spine-like hairs, the margin more densely so; the basal part of the leaf entire, broadly obovate or roundish, 2-4 mm. across; involucral leaves similar but more spinose: flowers few; calyx 1 cm. long, the glabrous tube only 2 mm. long, the narrowly linear-lanceolate lobes over 1 mm. wide at base, long acuminate, connected at the base for nearly 2 mm. by a membrane, sparingly spinose hairy like the leaves: corolla 2 cm. long, the slender, almost filiform purplish tube about 16 mm.

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long; throat funnelform, yellow, less than 2 mm. long, and as wide across the top; lobes rose-color or pink when fresh, quadrate-oblong; over 2 mm. long, the apex a little unevenly rounded: stamens 1 mm. shorter than the corolla; anthers bright yellow, broadly oblong, 1 mm. long: pistil a little longer than the stamens: capsule oblong, 5 mm. long, 3 mm. wide: seeds (apparently immature) quadrate oblong and oblique, 1 mm. long, pale and greenish with narrow hyaline wings.

The type was collected by the writer May 6, 1902, in fields near Clear Creek Post Office, Butte county, California. It is with pleasure that I dedicate this species to Miss Alice Eastwood, Curator of the herbarium of the California Academy of Sciences, to whom I am indebted for many courtesies. It is related to *L. bicolor*, but is easily distinguished by its larger size, diffuse habit, and more slender corolla tube.

To this is referable a specimen in the herbarium of the California Academy of Sciences, collected by Buckminster at Madera, May, 1889, from which Miss Milliken described her "*Linanthus serrulatus* Greene;" but true *serrulatus*, also collected by Buckminster at the same time and place, is a very different plant, as evinced by the original description, and by a specimen in the Academy herbarium which Miss Milliken evidently did not see. Here also belongs a specimen collected by Blaisdell at Mokelumne Hill, April 15, 1900, giving the species a range along the foothills of the Sierra from the central part of the State north into Butte county at least. Those who do not recognize *Linanthus* as distinct from *Gilia*, may call this species **Gilia Eastwoodae** Heller.

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Volume 1 No. 8

MUHLENBERGIA

A. A. HELLER, Editor

LOS GATOS, CALIFORNIA, APRIL 24, 1906

[All unsigned articles in this journal are by the Editor, and the types of all new species described by him are deposited in his private herbarium, unless otherwise stated.]

NOMENCLATORIAL CHANGES IN THE ORCHIDACEAE

BY HOMER D. HOUSE

The revision of the North American Orchidaceae north of Mexico for the forthcoming third edition of Heller's Catalogue, made at Mr. Heller's request, necessitates some changes in their nomenclature, which are herewith presented.

Lysias macrophylla (Goldie) House

Habenaria macrophylla Goldie, Edinb. Phil. Journ. **6**: 331. 1822.

Platanthera orbiculata Lindl. Orch. Pl. 286. 1835.

Lysias orbiculata Rydb. in Britton, Manual, 294. 1901; in part.

Blephariglottis alba (Michx.) House

Orchis ciliaris var. *alba* Michx. Fl. Bor. Am. **2**: 156. 1803; not *Orchis alba* Lam. 1778.

Orchis blephariglottis Willd. Sp. Pl. **4**: 9. 1805.

Habenaria blephariglottis Torr. Comp. 317. 1826.

Habenaria ciliaris var. *alba* Morong, Bull. Torr. Club, **20**: 38. 1893.

Blephariglottis Blephariglottis Rydb. in Britton, Manual, 296. 1901.

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By the code of nomenclature proposed by the Botanical Club of the American Association for the Advancement of Science, the varietal name proposed by Michaux is not invalidated by Lamarck's earlier specific name. The combination of *Blephariglottis blephariglottis* is against the recent ruling of the Vienna Botanical Congress, so that the adoption of the earliest name for this species seems to be the best solution.

Ibidium Beckii (Lindl.) House

Spiranthes Beckii Lindl. Orch. Pl. 472. 1840. excl. syn.
Spiranthes simplex Gray, Manual, Ed. 5, 506. 1867; not Griseb.
Spiranthes Grayi Ames, Rhodora, **6**: 44. 1904.
Gyrostachys simplex Kuntze, Rev. Gen. Pt. II. 664. 1891.

Ibidium laciniatum (Small) House

Gyrostachys laciniata Small, Fl. Southeastern U. S. 318. 1903.
Spiranthes laciniata Ames, Orch. 120. 1905.

Ibidium longilabris (Lindl.) House

Spiranthes longilabris Lindl. Orch. Pl. 467. 1840.
Spiranthes brevifolia Chapm. Fl. S. U. S. 462. 1860.
Gyrostachys brevifolia Kuntze, Rev. Gen. Pt. II. 664. 1891.

Ibidium odoratum (Nutt.) House

Neottia odorata Nutt. Journ. Acad. Phila. **7**: 98. 1834.
Spiranthes odorata Lindl. Orch. Pl. 467. 1840.
Gyrostachys odorata Kuntze, Rev. Gen. Pt. II. 664. 1891.
Gyrostachys triloba Small, Bull. Torr. Club, **25**: 609. 1898.

Ibidium ovalis (Lindl.) House

Spiranthes ovalis Lindl. Orch. Pl. 466. 1840.
Spiranthes cernua var. *parviflora* Chapm. Fl. S. U. S. Ed. 3, 488. 1897.
Gyrostachys parviflora Small, Fl. Southeastern U. S. 318. 1903.
Spiranthes parviflora Ames, Orch. 137. 1905.

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Ibidium praecox (Walt.) House

Limodorum praecox Walt. Fl. Car. 221. 1788.

Spiranthes tortilis Chapm. Fl. S. U. S. 462. 1860; not Rich.

Spiranthes praecox Wats. Gray's Manual, Ed. 6, 503. 1890, as to syn.

Gyrostachys praecox Kuntze, Rev. Gen. Pt. II. 663. 1891.

Ibidium Romanzoffianum (Cham.) House

Spiranthes Romanzoffiana Cham. Linnaea, **3**: 32. 1828.

Neottia gemmipara Smith, Eng. Fl. **4**: 36. 1828.

Spiranthes gemmipara Lindl. Syn. Brit. Fl. 257 1829.

Gyrostachys Romanzoffiana MacM. Met. Minn. 171. 1892, as to syn.

Orchiastrum Romanzoffianum Greene, Man. Bot. San Fran. Bay, 306. 1894.

Ibidium tortilis (Sw.) House

Satyrium spirale Sw. Prodr. 118. 1788; not *Ibidium spirale* Salisb.

Neottia tortilis Sw. in Schrad. Neues Journ. **1**: 51. 1805. Fl. Ind. Dcc. **3**: 1406. 1806.

Spiranthes tortilis L. C. Rich. Mem. Mus. Par. **4**: 59. 1818.

Gyrostachys peruviana Kuntze, Rev. Gen. Pt. II. 663. 1891; not *Ophrys peruviana* Aubl. 1775.

Ibidium x intermedium (Ames) House

Spiranthes x *intermedium* Ames, Rhodora, **5**: 262. 1903. (*gracilis* x *vernalis*)

Epidendrum ramosum (Focke) House

Isochilus ramosus Focke, Tijdschr. Natuurk. Wetensch. **4**: 69. 1851.

Epidendrum strobiliferum Reichenb. f. Nederl. Krindk. Arch. **4**: 333. 1858.

Epidendrum triandrum (Ames) House

Epidendrum cochleatum var. *triandrum* Ames, Cont. Ames Bot. Lab. **1**: 16. 1904.

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A NEW SPECIES OF DICHONDRA

By Homer D. House

By most authors the Dichondraceae Dumort, is regarded as a tribe or subfamily of the Convolvulaceae. It seems, however, that the character of two separate carpels with basally attached styles is of sufficient morphological importance to warrant the separation proposed by Dumort.

The following new species from southern California and the adjacent islands is related to *D. repens*, and that relationship together with the position of the other species native to the United States is best expressed by the following key:

Sepals obtuse
- Sepals shorter than the capsules, about 1.5 mm. long; corolla exceeding the calyx
  - Leaves broadly reniform, entire, 2 to 5 cm. broad, nearly glabrous. Southern California and adjacent islands — D. occidentalis
  - Leaves cordate-orbicular, repand-crenate, 1 to 2 cm. broad, pubescent. West Indian. — D. repens
- Sepals longer than the capsules, 1.5 to 3 mm. long; corolla shorter than the calyx; plant pubescent or glabrate; sepals conspicuously spatulate. Southeastern U. S. — D. Carolinensis

Sepals acute; leaf blades silvery-pubescent; corolla exceeding the calyx. New Mexico, Arizona and Mexico. — D. argentea

Dichondra occidentalis sp. nov.

Stem perennial, slender, creeping, branching, 10 to 40 cm. long, glabrate, or appressed pubescent when young with silvery hairs: leaf-blades large, broadly reniform, 2 to 5 cm. broad, 1 to 3 cm. long, usually retuse at the apex, glabrous or with some scattered pubescence, dark green above, paler beneath, shallowly cordate and somewhat cuneate at the base, 7-nerved; petioles 5 to 8 cm. long, pubescent toward the base: peduncles filiform, 1 to 2 cm. long: calyx turbinate, densely pubescent, its lobes obovate, 1.5 mm. long, blunt or rounded, scarcely enlarged in fruit: corolla nearly twice as long as the calyx, subrotate, white, its

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lobes ovate, obtuse: capsules about 4 mm. high, subglobose, sericeous-pubescent: seeds brown, glabrous, 1.5 mm. long.

San Diego, California, C. R. Orcutt, January 7, 1884. Type in the United States National Herbarium.

Lower California, Todos Santos Island, A. W. Anthony (No. 191) 1897.

Avalon, Santa Catalina Island, California, Blanche Trask, April, 1898.

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WESTERN SPECIES, NEW AND OLD.—V.

Dichelostemma pulchellum (Salisb.)

Hookera pulchella Salisb. Parad. Lond. **2**: *pl. 117*. 1808.
Brodiaea pulchella Greene, Bull. Cal. Acad. **2**: 133. 1886.

This species has commonly been confused with *D. congestum*, and has never apparently been transferred to the genus where it belongs.

Cytherea occidentalis (Holzinger)

Calypso bulbosa forma *occidentalis* Holzinger, Cont. U. S. Nat. Herb. **3**: 251. 1895.
Calypso occidentalis Heller, Bull. Torr. Club, **25**: 193. 1898.

The writer collected the type of this plant, and again got it at type locality in 1896. It has never been properly described, but some day we hope to find it again here in California, and carefully diagnose it in the living state.

Spraguea montana (Jones)

Spraguea umbellata var. *montana* Jones, Bull. Torr. Club, **9**: 31. 1882.
Calyptridium nudum Greene, Pittonia, **1**: 64. 1887.
Spraguea nuda Howell, Erythea, **1**: 39. 1893.

The writer obtained this species July 27, 1903, no. 7024, east of Summit Station near the railroad crossing, at practically the type locality, for the types of both Jones and Greene were from the immediate neighborhood. It was also seen on Castle Peak and at other near-by points. From living plants it was noted that the petals are ovate-oblong, very slightly contracted below, acuminate and cuspidate, 2 mm. wide but commonly somewhat involute, which in dried specimens would no doubt cause the narrow appearance described by Greene. The stamens are yellow, as noted by Jones, who also remarks that "the var. grows at a higher altitude than the typical form, generally

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close to snow." This fact was also observed at our station, where *S. umbellata* occurrs sparingly and apparently reaches its altitudinal limit, 7000 feet, not having been seen at higher elevations, and *S. montana* apparently does not descend below 7000 feet. It has a very different appearance both in the field and in the herbarium, although at the point where the two species meet one may find an occasional intergrading form. That it is a mutate of *S. umbellata* is altogether probable, but to me it seems absurd to question its validity simply because transition forms may be found at the point where the two species overlap.

Ribes

This genus is one that lends itself very well to critical examination in the dried state; but observation has shown me that all plants can be studied better when fresh, and some only in that state if we want to get at their true characters.

In *Ribes* at least so far as the gooseberries are concerned, the comparative length of stamens and petals seems to furnish good characters, but the flower should be in its prime if satisfactory results are to be obtained. In young flowers the stamens are liable to be too short, and descriptions should not be based upon such material.

Ribes occidentale is common about Los Gatos, inhabiting especially the low hills bordering the valley. In all the flowers thus far examined from numerous bushes and at widely separated points, the style is 2-parted, but in newly opened flowers the two parts are pressed so closely together that one making only a superficial examination might conclude that the organ is entire. To the description of this species given on page 88 of this volume, may be added the character, stamens with a short recurved mucro.

Ribes subvestitum. The remarks concerning the style of *R. occidentale* apply equally well to this species, for in young flowers the two parts are often so united that one must actually pull them apart, but so far as observed they are never really

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united in the true sense of the word. The original description says that "in all the flowers except one the style is decidedly simple, but in that one it is bifid to near the middle." Mature fruit of this species was observed for the first time last summer. It is yellow, almost the color of old gold, but a trifle paler, globose, the body at least 8 mm. in diameter, densely covered with weak glandular bristles about 5 mm. long. It is a handsome species, the large white petals showing well against the deep maroon of the sepals. The anthers are connivent around the style, and are surmounted by a short outcurved mucro.

Ribes Parishii

Shrub, the bark whitened with a soft close tomentum: infrastipular spines apparently single, rather slender, declined, pale brown, tomentose at the base, about 1 cm. long: leaves broadly ovate or orbicular in outline, 3 cm. long and as broad, or larger on young shoots, 3-lobed, the lobes coarsely crenate, or the lateral ones sometimes slightly 2-lobed, white villous below and on the margins, green and glabrate above when mature; petioles slender, villous, usually equalling the blade: peduncles slender, declined, about 2 cm. long, densely villous, usually with several short branches near the end, each of which is subtended by a small (1 mm.) roundish densely villous bract: flowers several in a cluster, but only one or two from each pedicel; pedicels slender, villous, about 5 mm. long: calyx 8 or 9 mm. long, purplish-red, strigose pubescent without, the tube campanulate, 4 mm. long and nearly as wide across the top, pubescent within; the lobes oblong, a little over 4 mm. long, 2 mm. wide, glabrous and yellowish or greenish on the inside, the end rounded: petals fan-shaped, colored like the outside of the sepals, 2 mm. long and as wide, delicately veined: stamens equalling but not exceeding the unreflexed calyx; filaments rather stout; anthers pale yellow, oblong, 1 mm. long: style densely villous on the lower half, 2-parted to the middle (or occasionally 3-parted), exserted 2 mm. beyond the stamens: ovary glabrous or sometimes a little villous.

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The type was collected by Mr. S. B. Parish in San Bernardino Valley, San Bernardino county, California, altitude 1000 feet, March 15, 1905, no. 5364, and sent to me under the name *Ribes divaricatum*. It differs from that species in gross appearance by its white villous leafles and larger flowers, and upon closer examination in its naked instead of setose or aculeate stems; in its pubescent instead of glabrous leaves; in the flower clusters longer instead of shorter than the leaves; in the calyx lobes only as long or very slightly exceeding the tube instead of twice as long, and in the stamens only equalling instead of much exserted from the calyx.

Mr. Stewardson Brown, Curator of the herbarium of the Academy of Natural Sciences of Philadelphia, to whom a specimen was sent for comparison with the type of Nuttall's *Ribes villosum*, says "it differs from it in having larger flowers, larger peduncles and less hairy calyx; general leaf form is about the same, but more densely villous, as is also the stem. However, it is nearer this species in general characters than what we have called *R. divaricatum* Dougl."

Trifolium inconspicuum (Fernald)

Trifolium gracilentum var. *inconspicuum* Fernald, Zoe, **4**: 380. 1894.

I have before me a specimen which no doubt belongs to this species, Mr. S. B. Parish's no. 5220, collected May 4, 1903, near San Bernardino, California, the type locality. In all save size of flower heads, this specimen is several times larger than the original. It may be distinguished at once from typical *T. gracilentum* of the Bay region by the peculiar grey-green color of the foliage. The flowers are paler and broader, and the seeds apparently lighter in color. These points, together with the calyx as long or longer than the flower, seem to warrant a specific name for this plant.

I can see no object in burdening literature with varietal or form names. If a plant is considered distinct enough for a

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name, it should be called a species and *fully* described instead of being launched into the botanical world equipped with little else than a name. Many plants cannot be recognized by their "descriptions" alone, for the chief characters are not mentioned, only some of the minor ones; and of such so-called descriptions we have not a few.

Trifolium Grantianum

Trifolium monanthum tenerum Parish, Bot. Gaz. **38**: 461. 1904: not *T. tenerum* Eastw.

Perennial, matted caespitose from running rootstocks, glabrous throughout leaves generally longer than the internodes; petioles filiform, longer than the leaflets, these oblanceolate or cuneate, 5-12 mm. long, 1.4 mm. wide, aristate-acuminate or some truncate and slightly notched, conspicuously veiny, the margins setosely serrulate; stipules lanceolate, adnate for barely half their length, 8 mm. long or less, the larger over 2 mm. wide, the lower adnate part either partly scarious or green, the upper free part green, aristate pointed, margins entire: heads commonly 2-flowered on filiform peduncles shorter than the subtending leaf: involucre 2 mm. long of several lanceolate or oblong bracts barely united at base, the apex either simple or with two or three short aristate teeth: calyx cylindrical or somewhat campanulate, 4 mm. long, the tube 2 mm. long, more or less membranous, veins prominent; the narrowly lanceolate teeth aristate, green: corollas 1 cm. long, slender, 2 mm. across, whitish, the hood of the keel purple. It has been impossible with the means at hand to properly dissect the flower, but the several parts are apparently destitute of the teeth and auriculations present in *T. tenerum*.

The type is Geo. B. Grant's no. 6343, collected July 23, 1904, on Mt. San Gorgonio, San Bernardino county, California, distributed as *Trifolium tenerum* Eastw. But Miss Eastwood's description in Bull. Torr. Club, **29**: 81. 1902, shows a number of differences, prominent among them being "canescent and

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softly villous throughout with fine white loosely-spreading hairs." Mr. Parish cites Mr. Grant's plant as part of his *T. monanthum tenerum*, but if the plant of his own collecting is identical with ours, he did not have *T. tenerum* Eastw. *T. Grantianum* has branches 1 dm. or more in length. The foliage is blue-green in color. Although belonging to the same group, it is very different from typical *T. monanthum*.

Hesperastragalus dispermus (Gray)

Astragalus dispermus Gray, Proc. Am. Acad. **13**: 365. 1878.

The type of this species was collected at Wickenburg, Arizona, by Dr. Palmer, in 1876. The plant has also been found in southeastern California.

To the writer this genus appeals as one of the most distinct of the *Astragalus* segregates. Not only do the plants not resemble true *Astragalus* in outward appearance, but the peculiar pod, almost two-parted in the type species, is a strong character, outwardly evident, without the necessity of cross-sectioning. It is altogether possible that flower characters may be found to reinforce fruit characters in these different genera when the living plants are studied, which is the only way to properly study them.

Since the above was written it has been possible to examine fresh flowers of the two common species. The structure is essentially that of a *Trifolium* flower. The banner is almost plane, either slightly concave on the ventral side with rounded entire apex (this noted in a perhaps undescribed form from the San Joaquin valley), or as in *H. Gambellianus* from Los Gatos the ventral side with a longitudinal depression, the rounded apex notched and slightly turned back. The wings are about three-fourths the length of the banner, standing almost parallel with it, and away from the keel, this latter as long as the wings or nearly so, broad in proportion to the size of the flower, the hooded apex not much deeper than the body.

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Whether *Astragalus Brazoensis* should be included in *Hesperastragalus*, I do not know, not at present having material for comparison. The three species which are known to me may be distinguished as follows:

Pods erect	
Slightly longer than the black-hirsute calyx	H. didymocarpus
Not exceeding the white-villous calyx	H. dispermus
Pods deflexed, much longer than the calyx	H. Gambellianus

Acrolasia parviflora

Mentzelia parviflora Heller, Bull. Torr. Club, **25**: 199. 1898.

This species seems to have escaped a change of name when Dr. Rydberg transferred the *Mentzelia* names which belong to this genus. I can find no reference to the use of *Bartonia parviflora* Douglas, which could invalidate the present name.

Professor Greene has recently pointed out (Leaflets, **1**: 168), that the type of the genus *Monardella* is a plant of the eastern side of the continent, not congeneric with our western plants which have been called *Monardella*, and therefore very properly assigns to them a new name, calling them *Madronella*. The writer has recently published several species in this genus, and will now transfer them to their proper name.

Madronella involucrata

Monardella involucrata Heller, Muhlenbergia, **1**: 34. 1904.

Madronella mollis

Monardella mollis Heller, Muhlenbergia, **1**: 35. 1904.

Madronella coriacea

Monardella coriacea Heller, Muhlenbergia, **1**: 35. 1904.

Madronella pallida

Monardella pallida Heller, Muhlenbergia, **1**: 36. 1904.

Madronella pinetorum

Monardella pinetorum Heller, Muhlenbergia, **1**: 36. 1904.

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Volume 1 No. 9

MUHLENBERGIA

A. A. HELLER, Editor

LOS GATOS, CALIFORNIA, JULY 30, 1906

[All unsigned articles in this journal are by the Editor, and the types of all new species described by him are deposited in his private herbarium, unless otherwise stated.]

COLORADO NOTES

DESCRIPTIONS OF NEW SPECIES

BY GEORGE E. OSTERHOUT

Allionia montanensis

Perennial from a tuberous root: stems usually two or three, slender, 5-7 dm. high, branching above, whitish below, glabrous up to the branches of the inflorescence which are glandular pubescent: leaves narrowly linear, 5-7 cm. long, tapering to both ends, becoming smaller and bract-like at the nodes above: involucres numerous, 5 mm. high, usually 3-flowered, hirsute: flowers bright purple: fruit obovate, 5-angled, but the ribs small, pubescent with a fine and close pubescence, scarcely tubercled between the ribs, 3 mm. long.

Distinguished from *Allionia linearis* by the more slender stem and leaves, smaller involucre, and especially by the smaller less distinctly ribbed and tubercled fruit. Type specimens collected in the canyon of the Thompson river, near the forks of the river, Larimer county, Colorado, August 16, 1905, no. 3078. Collected also in the canyon of the Cache La Pouder, near Home Post Office, July, 1904.

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Astragalus (Xylophacos) puniceus

Perennial from the root, the stems decumbent, about 3 dm. long, pubescent throughout with a short close silvery pubescence, much branched: leaves pubescent like the stem, the rachis about 6 cm. long and having 6-9 pairs of oblong or obovate leaflets each 7-10 mm. long: inflorescence in a loose head becoming spike-like, the corollas 2 cm. long, purple, glabrous, the banner darker: calyx 1 cm. long, pubescent with a whitish woolly pubescence, the teeth 3 mm. long and acuminate: legume coriaceous, sessile, 2 cm. long, curved and pointed, pubescent with a whitish pubescence and slightly mottled, without a partition, but the lower suture impressed.

The stem of this plant is much longer than in other species of this section of *Astragalus* as I know them, but the legume is like that of *Astragalus Missouriensis* and its allies. Collected at Trinidad, Las Animas county, Colorado, June 28, 1898, no. 1737.

Erigeron paucipetalus

A small perennial growing in clumps, the stems about 1.5 dm. high, the upper portion glandular, the lower portion and the leaves glabrous: root leaves narrowly obovate or oblanceolate and rounded or slightly pointed, tapering to a petiole, 5-8 mm. wide, about 3 cm. long including the petiole; lower stem leaves very narrow and acuminate, 2 mm. wide and 3 cm. long, becoming smaller and bract-like upward: stem branched into a racemiform inflorescence, the upper heads on peduncles 3 cm. or more long: involucre glandular, the bracts narrow, about 5 mm. long, in two series, the outer somewhat shorter than the inner: rays rather large, few, 16-20, purple.

The relationship of this *Erigeron* is not plain; it is quite different from other Colorado species so far as I am acquainted with them, but might be placed in the section with *Erigeron caespitosus*. Collected about the sulphur springs at Sulphur Springs, Grand county, Colorado, July 16, 1905, no. 3051.

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Gnaphalium albatum

A much branched perennial (?) upright and rather stout, the stem and leaves covered with a silvery white tomentum, but the leaves less so on the upper surface: stem about 3 dm. high, very leafy, the lower leaves oblanceolate, 3 cm. long by 1 cm. wide, sessile, the upper becoming smaller: heads numerous and glomerate on the ends of the branches, 5-7 mm. high; involucres woolly only at base, ends of the bracts white and pointed: hermaphrodite flowers very few.

A species seemingly nearest related to *Gnaphalium Wrightii* A. Gray. Collected in the canyon of the Thompson river, between the foothills and Estes Park, Larimer county, Colorado, August 16, 1905, no. 3158.

Carduus laterifolius

Stems rather slender, 6-8 dm. high, branched above, almost glabrous at the time of flowering: leaves broad, oblong, 1-1.5 dm. long, 5-6 cm. wide, sessile by a broad auriculate base but scarcely decurrent on the stem, glabrous above, white beneath with a close short tomentum, three to four large triangular teeth on each side tipped with a weak spine about 3 mm. long, and numerous prickles on the edge of the leaf, the leaves smaller above and becoming entire: heads few and single at the ends of the branches, 2.5 cm. long including the flowers, the portion made by the bracts 1.5 cm. long, 1.5 cm. wide, subtended by one or two small leaves, or some of the heads by larger leaves exceeding them in length: the bracts in four series of successive lengths, the outer 5-7 mm. long, 2 mm. wide at base, glabrous except for slight tomentum on the edges, the outer having a weak spine, the inner a longer soft tip which is somewhat reflexed; all the bracts except the innermost slightly fimbriate on the upper edges, and having a small glandular ridge which shows as a dark spot on the dried specimens: flowers whitish, the pappus brownish.

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Probably nearest related to *Carduus oreophlius* Rydb. Collected in the canyon of the Thompson river, between the foothills and Estes Park, Larimer county, Colorado, August 16, 1905, no. 3090.

Ptilocalais tenuifolia

One to three scapose stems 1-2 dm. high from a fusiform root, surrounded at the base by narrowly linear leaves 2 mm. wide and 1 cm. or more long, entire or some of them having distant down-pointing linear lobes, the stem also bearing one or two similar leaves: each stem bearing a single head or sending out one or two branches from the axils of the leaves: the whole plant glabrous except some slight dark pubescence on the involucre: the involucre 12-15 mm. long in two series of 12-15 linear acuminate bracts, with a few calyculate ones at base: achenes striate, truncate at summit, 5 mm. long and slightly attenuate downward: pappus of 15-18 plumose sordid bristles, paleaceous at base, each bristle about 7 mm. long, the paleaceous portion a little more than 1 mm. long.

Collected at Sulphur Springs, Grand county, Colorado, June 28, 1905, no. 2998—a fruiting specimen—and in flower at the same place June 11, 1906, no. 3235. Readily distinguished from *Ptilocalais nutans* (Geyer) Greene, by the narrow leaves and sordid pappus.

Crepis exilis

Seemingly a perennial, one or two slender stems from a tap-root, cinereus pubescent, becoming glabrate: leaves mostly at the base with scarious sheaths and short petioles, laciniate pinnatifid, 1 dm. long or some of them a little longer, tapering into a rather slender prolongation, the main body of the leaf 4-5 mm. wide, the linear lobes 1 cm. long; two or three stem leaves similar but much reduced in size, and the uppermost lanceolate and entire: stem branching at the top and having 3-5 heads on moderately short peduncles: principal bracts of the in-

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volucre 10-12, linear and acuminate, about 1 cm. long, grayish pubescent, a very few calyculate ones at base: achenes striate, fusiform but tapering more upward than downward, about 7 mm. long, and the bright white pappus the same length.

Seemingly somewhat related to *Crepis gracilis* (D C. Eaton) Rydb., but smaller. Collected at Sulphur Springs, Grand county, Colorado, June 28, 1905, no. 2979.

Agoseris leptocarpa

Perennial, one to four stems 1-1.5 dm. high from the root, slightly woolly pubescent at the base of the bracts: leaves linear, from entire to runcinate pinnatifid, 5-8 cm. long, 3-5 mm. wide, the lobes 3-5 mm. long, glabrous and a little glaucous or sometimes slightly villous-pubescent: heads about 2 cm. high, the bracts in three series, the outer about 7 mm. long, slightly pubescent, the inner 15 mm. long, glabrous: achenes fusiform, 5 mm. long, striate, tapering into a beak 5 mm. long, the bright white pappus 8-9 mm. long.

Related to *Agoseris gracilis*, but distinguished from it by the smaller size and the smaller achenes. No other of our Rocky mountain species, so far as I know, have achenes so small. Collected near Coulter Post Office, in Middle Park, Colorado, June 29, 1905, no. 2972.

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WESTERN SPECIES, NEW AND OLD.—VI.

Beckwithia juniperina (Jones)

Ranunculus Andersonii var. *tenellus* Wats. Bot. King Rep. 7. *pl. 1. f. 8-10.* 1871.

Ranunculus juniperinus Jones, Proc. Cal. Acad. II. **5**: 616. 1895.

Jones has very properly supplied this plant with a tenable name, but the long delay in recognizing its distinctness from the plant originally called *Ranunculus Andersonii* seems due to the fact that it has been rarely collected. The original was from "Pilot Rock Point, Salt Lake, Utah."

In Pittonia, **3**: 128-130, Professor Greene points out that *Cheiranthus*, not *Erysimum*, is the proper name for this genus of plants, and his reasons seem conclusive to me. However, *Erysimum* is still retained as the proper name by most botanists, although no one, I believe, has shown that Professor Greene is in the wrong. Until such proof is furnished, I shall continue the use of *Cheiranthus*. The forthcoming third edition of the "Catalogue of North American Plants" necessitates the change of combination for the sake of uniformity

Cheiranthus alpestris (Cockerell)

Erysimum asperum f. *alpestre* Cockerell, Bull. Torr. Club, **18**: 168. 1891.

Erysimum alpestre Rydb. Bull. Torr. Club, **28**: 277. 1901.

Cheiranthus oblanceolatus (Rydb.)

Erysimum oblanceolatum Rydb. Bull. Torr. Club, **31**: 557. 1904.

Cheiranthus radicatus (Rydb.)

Erysimum radicatum Rydb. Bull. Torr. Club, **31**: 558. 1904.

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Cheiranthus grandiflorus (Nutt.)

Erysimum grandiflorum Nutt.; T. & G. Fl. N. A. **1**: 96. 1838.

This species is quite local, being known only from the type locality, "sand hills of Point Pinos, in the vicinity of Monterey, Upper California."

Draba ammophila

Draba Helleri Small, Fl. S. U. S. 479. 1903; not *Draba Helleriana* Greene, Pittonia, **4**: 17. 1899.

The type of this species is my no. 1379, collected March 5, 1894, in sandy soil along the beach at Corpus Christi, Texas, and distributed as a dwarf form of *D. cuneifolia.*

Homalobus Wingatanus (Wats.)

Astragalus Wingatanus Wats. Proc. Am. Acad. **18**: 192. 1883.

Homalobus Wingatensis Rydb. Bull. Torr. Club, **31**: 563. 1904.?

A question mark is added to the last citation, since I merely infer that it belongs here. Dr. Rydberg cites no authority nor place of publication, merely saying: "This species is perhaps closest related to **Homalobus wingatensis** (*A. wingatensis*)." I can find no reference in the literature at hand to an *Astragalus Wingatensis.*

Three years ago I collected at Donner Pass in the Sierras a plant which was supposed to be a *Phlox.* To my surprise it proved to belong to the aggregation called *Gilia*, which is still in need of pruning, notwithstanding the recent segregations. The genus *Leptodactylon* should undoubtedly be restored, differing as it does from the typical *Gilia* of South America in the fact that it is shrubby, with fascicled rigid and pungent leaves, and has flowers of another shape. Up to the present eight named forms have been recognized, all but three already under *Leptodactylon*, and these three I now transfer.

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Leptodactylon patens

Gilia pungens var. *squarrosa* Gray, Proc. Am. Acad. 8: 267. 1870; not *Gilia squarrosa* H. & A.

Leptodactylon Hallii (Parish)

Gilia Hallii Parish, Erythea, 7: 94. 1899.

Gilia pungens var. *Hallii* Milliken, Univ. Cal. Pub. Bot. 2: 42. 1904.

Leptodactylon tenuilobum (Parish)

Gilia tenuiloba Parish, Erythea, 7: 95. 1899.

Gilia pungens var. *tenuiloba* Milliken, Univ. Cal. Pub. Bot. 2: 43. 1904.

Navarretia erecta

Stems rather slender, about 3 dm. high, with several erect branches above, pale, pubescent with soft white spreading or tangled hairs, glandular above: lower leaves if any, absent, those on the middle and upper part of the stem scattered, sessile, from 1-2 cm. long, about 1 cm. wide, cut into unequally pinnate rather distant very narrow almost filiform divisions with acerose tips, pubescent like the stem, and glandular: flowering heads dense, 2 cm. high and as broad: bracts like the leaves but proportionately shorter and broader, pubescent and glandular: calyx 8 or 9 mm. long, of five unequal narrow acerose divisions equalling or somewhat exceeding the tube, from one to three of them with one or two pairs of narrow divisions like the leaves and bracts, strongly ciliate with long chaffy hairs as well as glandular; tube 4 mm. long, with a narrow membrane between the broader straw-colored central part which is only faintly veined, not ribbed: corolla violet-blue, 1 cm. long, the slender tube about 7 mm. long, the throat funnel-form, 2 mm. wide above; lobes ovate, blunt and rounded, barely 2 mm. long and about as wide: capsule rather thin walled; seeds pale brown, apparently only two, ovate-oblong, 1 mm. long.

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The type was obtained along the roadside near Ukiah, Mendocino county, California, July 11, 1902, only a few specimens collected. In general appearance it resembles such species as *N. mellita* and *N. squarrosa.*

Aloysia Wrightii (Gray)

Lippia Wrightii Gray, Amer. Journ. Sci. II. 18: 98. 1854.

Anaphalis sierrae

Stems from running rootstocks, 5 or 6 dm. high, rather weak, simple, clothed with a close cottony pubescence, leafy throughout: leaves thin, pubescent like the stem, but much less so, the upper side dull green, only scantily pubescent, the lower side paler but not white, indistinctly 3-nerved, oblong-lanceolate, acute and shortly apiculate, the larger ones on the middle part of the stem about 7 cm. long, 1 cm. wide, those above and below somewhat smaller, all sessile, the lower ones somewhat narrowed: heads several, corymbose-cymose, the peduncles and pedicels densely short woolly: bracts of the involucre numerous, pearly white, ovate. oblong, 4 mm. long, 2 mm. or more wide, obtuse or merely acutish.

The type is my no. 7116, collected along the wagon road between Donner Lake and Donner Pass, at about 6500 feet, growing among shrubs, the rather weak stems somewhat supported by them. It was distributed as *A. subalpina*, the type of which came from the Rocky mountains, but differs from that species in its thinner, less pointed leaves, dull instead of light green above, and in the less ample inflorescence with smaller flowers and less pointed involucral bracts. H. E. Brown's 551 frem Mt. Shasta is the same, and no doubt all the specimens of this genus from the Sierra Nevada should be referred here.

Carduus Tioganus (Congdon)

Cnicus Tioganus Congdon, Erythea, 7: 186. 1900.

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You can obtain genus labels like the above for **$1.00** a thousand. The numbers, taken from the *Genera Siphonogamarum* of Torre & Harms, show the systematic arrangement of the genera in Engler & Prantl's *Naturlichen Pflanzenfamilien.* The number 62 represents the position of the genus in the family Caryophyllaceae, and 2490 the total number of the genus in the sequence. The genera represented in this Catalogue will be printed in *black* ink, foreign genera in *red* ink. Either series may be had separately. Several labels will be furnished for large genera. Send your order to

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Several sets of my Porto Rican collection of 1900 may still be had at the rate of 10 cents per specimen, carriage prepaid. They contain about 100 species of flowering plants, among which are a number of species confined exclusively to Porto Rico, and one new species, *Daphnopsis Helleriana* Urban.

Besides the flowering plants, and the fungi and mosses enumerated below, there are 10 or 15 species of ferns, and 5 or 6 species each of lichens and hepatics. There are many more hepatics available for distribution, but they have not yet been identified.

Any complete group will be sold separately, at the price mentioned above, 10 cents per specimen. Specimens of fungi, mosses, etc., are large enough to make two specimens for those who may wish to divide them.

Mosses

Sematophyllum pungens repens R. & C.
Dicranella substenocarpa R. & C. n. sp.
Raphidostegium galipense R. & C.
Raphidostegium Kegelianum R. & C.
Raphidostegium microtheca R. & C.
Rhizogonium spiniforme Brid.
Caxithelium planum (Brid.) Mitt.
Pogonatum Sintensii parvum R. & C.
Thuidium Antillarum Besch.
Leucoloma serrulatum Brid.
Leucoloma Portoricense R. & C.
Leucobryum Martianum Hpe.

Fungi

Meliola Panici Earle, n. sp,
Meliola Ipomoeae Earle, n. sp.
Meliola glabra B. & C.
Meliola Piperis Earle, n. sp.
Meliola Psidi Fr.
Meliola Lagunculariae Earle, n. sp.
Coleosporium Elephantopodis Earle
Aecidium Wedeliae Earle, n. sp.
Lembosia Agaves Earle, n. sp.
Cercosporidium Helleri Earle, n. sp.
Cercospora Portoricensis Earle, n. sp.
Microthyrium Laguncularíae Wint.?
Endothia longirostris Earle, n. sp.
Puccinia Cyperi Arth.?
Puccinia Eleocharidis Arth.?
Guignardia prominens Earle, n. sp.

Hawaiian Fungi

Antennaria Guavae Cke.
Antennaria Robinsonii Berk.
Aschersonia marginata E. & E., n. sp.
Asterina globigera E. & E., n. sp.
Septoria graminium Desm.
Uredo prunastri DC.
Meliola inermis Katch. & Cke.
Meliola Cyperi Pat.
Hendersonia nitida E. & E.
Gloeosporium affine Agavae E. & E.
Phragmidium subcorticium E. & E.
Ustilago monolifera E. & E.
Puccinia Compositarum Mart.
Puccinia Hydrocotyle Mont.
Puccinia Oahuensis E. & E., n. sp.
Puccinia Scirpi DC.
Puccinia Xanthii Schw.
Diplodia subpilosa E. & E., n. sp.
Polyporus cupreo-roseus Berk.
Phyllosticta Scaevolae E. & E.. n. sp.
Meliola acervata E. & E., n. sp.
Currya Sandwicensis E. &. E., n. sp.

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